Public Health Reports

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IN THIS ISSUE

UNITED STATES PUBLIC HEALTH SERVICE

THOMAS PARRAN, *Surgeon General*

DIVISION OF SANITARY REPORTS AND STATISTICS

CHARLES V. AKIN, *Assistant Surgeon General, Chief of Division*

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It contains (1) current information regarding the prevalence and geographic distribution of communicable diseases in the United States, insofar as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other important communicable diseases throughout the world; (2) articles relating to the cause, prevention, and control of disease; (3) other pertinent information regarding sanitation and the conservation of the public health.

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Public Health Reports

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PREVALENCE OF POLIOMYELITIS

Reports received by the Public Health Service from the State health officers show 83 cases of poliomyelitis for the United States for the week ended June 24, 1939, as compared with 65 cases for the preceding week and with an expectancy of 82 cases based on the 5-year median. This total increase was due to the appearance of 1 or 2 additional cases in several scattered States, no one State reporting an increase of more than 3 cases over the preceding week.

For the current week, 30 cases were reported in South Carolina, as compared with 28 for the preceding week. Of these 30 cases, 4 were reported in Charleston and 2 in the county outside of Charleston.

From the first of the year to June 24, there have been 713 cases of poliomyelitis reported in the entire United States, as compared with a total of 669 cases for the median weeks of the same period during the preceding 5 years; but deducting the 232 cases which have been reported since the first of the year from South Carolina, where the disease has been unusually prevalent, the total would be only 481—much below the median figure. The present situation, therefore, in the country as a whole, does not appear to justify any apprehension.

THE PUBLIC HEALTH SERVICE LEAVES THE TREASURY DEPARTMENT

By BROCK C. HAMPTON, *Junior Administrative Officer, Division of Sanitary Reports and Statistics, United States Public Health Service*

After nearly 141 years, only 9 years less than the full life of the Nation itself as an independent republic under the Constitution, the United States Public Health Service leaves the administrative jurisdiction of the Treasury Department. As it passes from the jurisdictional aegis of the second ranking major department of the Federal Government, a brief review of the history and evolution of the Service and its activities may be of interest—an explanation of how it came about that public health matters were lodged in the fiscal branch of the Government, how the modern Federal Public Health Service has evolved from the early marine hospitals and quarantine activities,

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and how this evolution has unfolded pari passu with the development of modern sanitary science and the changing conception of the field of public health.

The Marine Hospital Service, the small but even then important branch of Government that later became the United States Public Health Service, was created on July 16, 1798, when John Adams, the second President of the United States, signed an act of Congress which provided for the establishment of hospitals for the care of sick and disabled American merchant seamen. The medical care of those who go down to the sea in ships has always been a problem to maritime countries. Most often illness, injuries, and disability come upon the sailor when he is away from home, at sea or in ports where he is unknown and has no claim on the local hospitals or the community. The sick or injured seaman who was in need of medical care could not remain on his vessel and receive proper treatment, and yet his lot would be little better if he were put ashore in a strange port without available facilities for hospital care and medical treatment. The following letter to the Secretary of State from Evan Jones, Esq., dated New Orleans, August 10, 1801 (then under Spanish rule), is a graphic description of the lack of treatment facilities for the seaman in most parts of the World at the close of the eighteenth century and of the distressing results which such lack brought about:

"A great number of American citizens," wrote Mr. Jones, "especially seamen and boatmen from the Ohio, die here yearly for want of a hospital, into which they might be put and taken care of, not that they are refused admittance into the Spanish Poor Hospital, but that building is by much too small for the purpose. No public house of any reputation will take them in, and consequently they lie in their ships or boats or get into wretched cabins, in which they die miserably, after frequently subjecting the humane among their countrymen to much trouble and expense. Would not this be an object, Sir, worthy of the attention of the Government of the United States? And might not a fund be easily established for the preservation of these poor people by imposing a light tax upon every vessel and boat that comes in, as well as upon every seaman and boatman?

"About 200 vessels have entered here from sea during the 12 months past, and, allowing 8 men only to each, it makes 1,600. Perhaps 350 to 400 boats have come down from the Ohio, etc., during the same time, and, allowing four men to each, it would make about an equal number of men. A small sum from each, added to something from every vessel and boat would probably produce a capital equal to the exigency."

The need for hospital and treatment facilities was recognized by Great Britain in our early Colonial history, and in 1692 Charles II

began the construction, in Greenwich, of what is believed to be the first building to have been provided by an English-speaking nation, and probably by any nation, exclusively for seamen. Sailors on vessels of the American colonies were taxed to support this hospital.

In America the States of Virginia and Massachusetts were the first to attempt to provide hospital and medical care for seamen taken sick away from home. They realized the necessity of having ships and seamen to man them for the transportation of the products of farm and plantation and to bring back the things they desired from foreign countries. The importance of a merchant marine both in peace and war was early recognized by the States and the new Republic.

In 1782 the Legislature of Virginia, in an effort to meet the need of seamen, passed an act providing for the collection of money from the captains of vessels for the purpose of building and supporting a hospital for disabled seamen, and several years later such a hospital was provided at Washington, Norfolk County, Va. On February 17, 1798, the State Legislature of the Commonwealth of Massachusetts passed a resolution to the effect that a hospital for seamen should be erected on the island of Martha's Vineyard. These were the first seamen's hospitals in America.

The first United States hospital actually provided for seamen under the provisions of the Federal Act of 1798 establishing the Marine Hospital Service was the Virginia hospital, at Washington, Norfolk County, which was purchased from the State in 1801, although the first treatment under the act was given in Boston as early as 1799. As the country grew, other marine hospitals were established at various ports on the Atlantic seaboard, at important river and Great Lake ports, and on the Pacific coast, and the administrative organization became known as the Marine Hospital Service.

The growth and evolution of public health functions from the Marine Hospital Service were along natural and logical lines. The medical officers, in providing care for American merchant seamen, were often the first physicians to diagnose such diseases as cholera, yellow fever, and smallpox which were being imported into the United States. This was especially true with reference to yellow fever in the Southern ports; and, during epidemics, when called upon for aid by State and local health authorities, the Marine Hospital Service was authorized by the President to aid those authorities in the control of those diseases. As early as 1799 Congress authorized the revenue cutters of the Customs Service, in the Treasury Department, to aid in the enforcement of the quarantine and health laws of the States, for in the early period of the history of the United States, these quarantine functions were exercised exclusively by the States and cities. Later they were gradually taken over by the Federal Government.

In the epidemics of cholera which frequently occurred at certain ports of the United States, the marine hospitals and the medical officers were utilized whenever practicable for the relief of persons suffering from that disease. During the Civil War these hospitals and their medical personnel were used by the military authorities of both the North and the South for the care of their military forces.

The real public health functions began to accrue in time. In 1878 Congress authorized the use of the Marine Hospital Service more extensively as a Federal health organization. An act approved on April 29 of that year gave very broad powers to the Service in the matter of cooperating with State and local health authorities in the control of disease. It was for the most part a quarantine act to prevent the introduction of contagious and infectious diseases into this country. A few years later, by an act approved March 27, 1890, the Service was specifically authorized to aid in the prevention of the introduction of four diseases, namely, cholera, yellow fever, smallpox, and plague, and by the act of February 15, 1893, the quarantine powers of the Service were extended to include all infectious and contagious diseases, in cooperation with State and local health agencies.

Recognizing the efficiency of military discipline and the need for mobility in the Marine Hospital Service corps in the control of epidemic diseases, Congress passed an act in 1889 which authorized the commissioned organization of the Service corps and provided that the officers be commissioned in grades similar to those of the medical department of the United States Army. An Executive order of April 3, 1917, issued pursuant to authorization in an act of Congress of July 1, 1902, provided that in times of threatened or actual war the Public Health Service shall constitute a part of the military forces of the United States.

Since the act of 1893, which effectively launched the Marine Hospital Service on its career as a Federal health agency, Congress continued to impose additional health functions, and on July 1, 1902, the act was passed changing its name to the United States Public Health and Marine Hospital Service, and an act of 1912 made the change to the United States Public Health Service, thus bringing the title of the organization more in accord with its enlarged public health functions. The larger part of its public health duties up to that time had been the combating of epidemics, especially those of yellow fever, which periodically appeared to scourge certain localities, cause an exodus of citizens from infected areas, and instill the fear of the then unconquered "yellow jack" into the hearts of all. When, in 1900, plague first threatened the United States through the port of San Francisco, the Public Health Service, then the Marine Hospital Service, stamped out the local infection and succeeded in preventing extensive spread of the disease to other parts of the country. This was accomplished

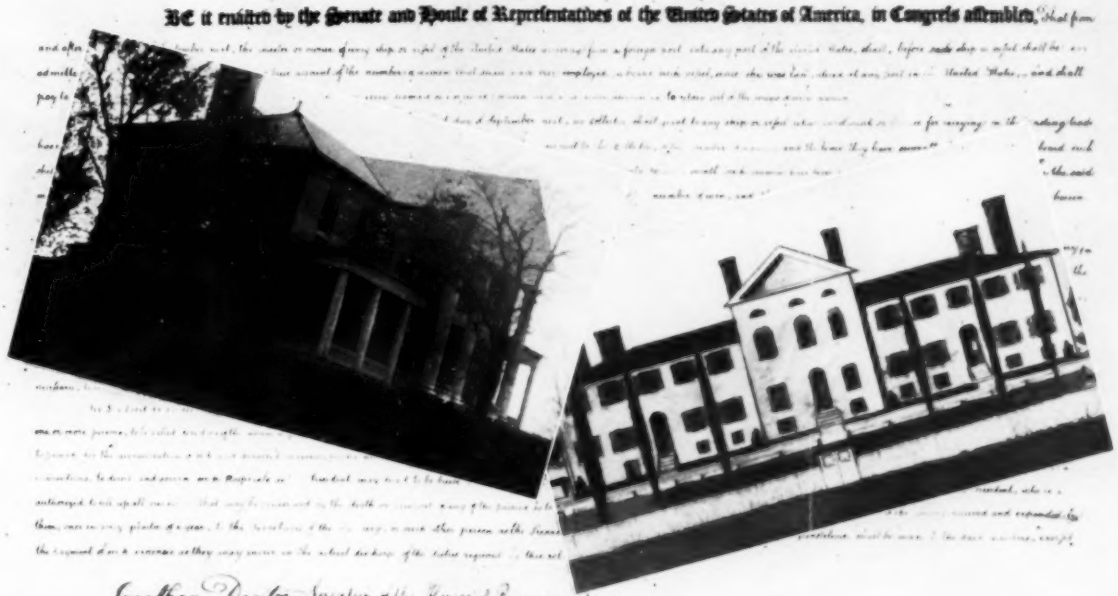
FIFTH *CONGRESS* OF THE UNITED STATES:

At the Second Seſſion.

Begun and held at the city of *Philadelphia*, in the ſtate of PENNSYLVANIA, on *Monday*, the thirteenth of *November*, one thouſand ſeven hundred and ninety-ſeven.

An **ACT** *for the relief of ſick and diſabled Seamen*

BE it enacted by the Senate and Houſe of Repreſentatives of the United States of America, in Congreſs aſſembled, That from



Jonathan Dayton Speaker of the Houſe of Repreſentatives

Frederick Augustus Muhlenberg Preſident of the Senate, pro tempore.

Approved July 16. 1798

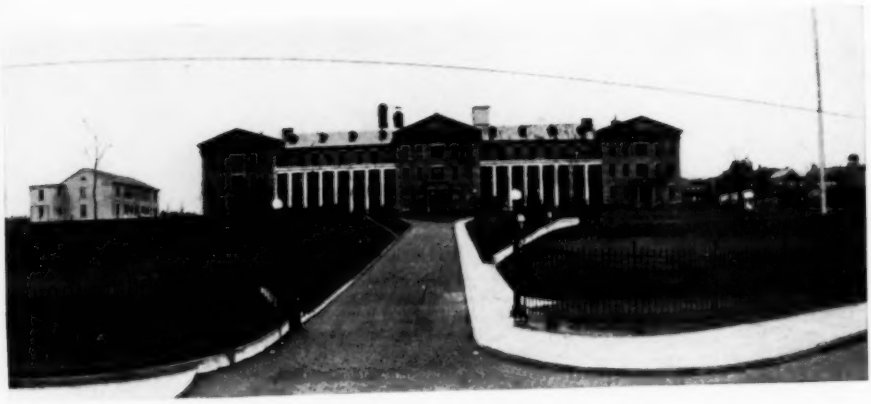
John Adams

Preſident of the United States.

Reproduction of original act creating the marine hospitals. Insert at left, the first Norfolk marine hospital; at right, the first marine hospital at Boston, Mass.

New United States Marine Hospital at Baltimore, Md.

New United States Marine Hospital at Seattle, Wash.



Old Marine Hospital at Stapleton, N. Y.

Old Hygienic Laboratory Building.

National Institute of Health Administration Building.

Old boarding vessel used by the quarantine service.

New Diesel-electric powered boarding vessel for quarantine stations in northern waters.

New gasoline-powered boarding vessel for southern waters.

in the face of one of the most difficult and trying situations ever encountered, in which the work was impeded by organized local opposition. It was in this drive against plague that the biological methods of control, of routing the rat and "building him out," were first applied in this country.

While the public health functions of the Service had their inception in the prevention of the introduction and spread of quarantinable diseases, their development in logical sequence has been brought about by advancement in the related sciences of public health, by informed public opinion, and by the changing concepts of the functions of Government and of the duties of a modern public health agency. In addition to the early hospital and quarantine duties have been added the investigative functions, that is, research in the causes and means of prevention and control of all diseases that affect mankind, study of improved methods of public health administration, and Federal aid in expanding and improving State and local health services in conformity with modern public health ideologies.

While research began with the investigations of such diseases as yellow fever and cholera, in the early history of the Service, it was not until March 3, 1901, that Congress authorized the building of the Hygienic Laboratory for the purpose of conducting investigations of infectious and contagious diseases and matters pertaining to the public health. In 1912 an act was passed extending these research functions to the study and investigation of all diseases of mankind and conditions influencing the propagation and spread thereof, including sanitation and sewage and the pollution either directly or indirectly of the navigable streams and lakes of the United States.

An act of July 1, 1902, gave the Public Health Service supervisory power and authority to regulate, through license, the sale of viruses, serums, toxins, and analogous products shipped in interstate commerce. An act of February 5, 1917, imposed upon the Service the duty of conducting physical and mental examinations of all arriving aliens and authorized the detail of medical officers of the Service to foreign countries for the examination of intending immigrants.

An important advance was marked in 1918 by an act of Congress creating the Division of Venereal Diseases and authorizing cooperation with State boards or departments of health for the control of these diseases within the States and preventing their spread in interstate traffic. The activities authorized in that act have been vastly extended by the act approved on May 24, 1938, discussed later, which provides for assistance, through grants-in-aid, to the States and local districts in establishing and maintaining adequate measures for the prevention, treatment, and control of the venereal diseases and authorizes annual appropriations.

In 1919 Congress authorized the Public Health Service to provide hospital and sanatorium facilities for discharged sick and disabled soldiers, sailors, and marines of the World War. This, of course, with the inadequate facilities immediately available, proved a Herculean task, even for an organization accustomed to hospital administration; and for 3 years, 1919–22, before the Veterans' Bureau (now the Veterans' Administration) was organized in 1922, the Public Health Service bore the heavy emergency responsibility of providing hospital care and treatment for sick and disabled veterans returning from the World War.

Other important acts extending the functions of the Public Health Service have provided for the establishment of a National Leprosarium at Carville, La. (1917), for the construction and operation of two United States Public Health Service Hospitals at Lexington, Ky., and Fort Worth, Tex., for the confinement and treatment of narcotic addicts, and the creation of the Narcotics Division, later renamed the Division of Mental Hygiene (1929), for the establishment of a hospital for defective delinquents, at Springfield, Mo. (1930), authorizing the Public Health Service to provide medical services in Federal prisons, and providing for the establishment, operation, and broad investigative functions of the National Institute of Health (formerly the Hygienic Laboratory) (1930).

The most important recent legislation affecting the Public Health Service and promoting public health in the United States are three acts passed since 1934, namely, the Social Security Act, approved August 14, 1935, the National Cancer Act, approved August 5, 1937, and the Venereal Diseases Act, approved May 24, 1938.

Under title VI of the Social Security Act, authority is granted for an annual appropriation of not to exceed $8,000,000 for the purpose of assisting States and local health districts in the establishment and maintenance of adequate health services, including the training of personnel, and an annual appropriation of not to exceed $2,000,000 to the Public Health Service for research activities and expenses of cooperation with the States in the administration of Federal funds granted in aid for improved State and local health services.

The National Cancer Act provides for the establishment of the National Cancer Institute, for the purpose of conducting researches, investigations, experiments, and studies relating to the cause, diagnosis, and treatment of cancer; for assisting and fostering similar research activities by other agencies, public and private; and for promoting the coordination of all such researches and activities and the useful application of their results, with a view to the development and prompt widespread use of the most effective methods of prevention, diagnosis, and treatment of cancer. The Cancer Institute is located on a 60-acre tract of land near Bethesda, Md., donated by

Mr. and Mrs. Luke I. Wilson. It is one of a group of six structures that comprise the National Institute of Health. The cornerstone of the first of the National Institute of Health buildings was laid June 30, 1938, and the administration building and two other units were occupied early in 1939.

The Venereal Diseases Act imposes additional duties upon the Public Health Service in connection with the investigation and control of venereal diseases and provides for Federal grants-in-aid for the purpose of assisting States and local health districts in establishing and maintaining adequate measures for the prevention, treatment, and control of the venereal diseases; for conducting studies and demonstrations to develop more effective measures of prevention, treatment, and control; and for the training of personnel. It also authorizes to be appropriated annual sums of $3,000,000, $5,000,000 and $7,000,000 in the first three successive years following the passage of the act and for each fiscal year thereafter such sums as may be deemed necessary to carry out the provisions of the act.

These three recent enactments of Congress reflect the changing concepts of the field of public health and the changing emphasis on the various activities—from general quarantine and sanitation measures to the provision of adequate public health facilities for all the people, from diseases already so successfully reduced and controlled by modern sanitary and other public health measures to those heretofore unattacked or unsuccessfully combated, such as the venereal diseases, cancer, heart disease, and other chronic conditions of the older age groups. Not that earlier basic measures are neglected; for in some instances, as in the case of yellow fever, it has recently been found necessary to extend quarantine inspection activities, especially as the result of speedy airplane travel and the existence of foci of jungle yellow fever in South America and the possibility of animal reservoirs and as yet unknown vectors of the disease; but rather greater attention is now being paid to the expansion of health facilities and to research in fields which offer greater hope and promise in the reduction of disease and suffering. It is now realized, also, that adequate medical care for large numbers of our population cannot be provided without improved and extended public health organization and a greater measure of public subvention. By reason of an inherent interest in the problem, fundamental organization, and medical knowledge, the health organizations, Federal and State, are the best qualified and equipped agencies to take the leadership in reducing the amount, severity, and economic consequences of illness. To be effectual, this leadership may, in the future, of necessity include in the public health program the operation of publicly supported facilities and services in which medical care and other means for the improvement of human health and welfare provide the central purpose; and provision for this activity

in the field of health advancement may be interwoven into the future pattern of public health.

After nearly a century and a half under the administrative jurisdiction of the Treasury Department, the entire period of the life of the Public Health Service, the Service left that Department on July 1, 1939. In the beginning, the reasons that the Public Health Service came under the Treasury were natural and logical. That Department was the one concerned with commerce, the early taxes imposed on the seamen for the support of the marine hospitals were collected from the masters of the vessels by the collectors of the customs, and the revenue cutters of the Customs Service were early authorized to observe and aid in the enforcement of State quarantine and health laws; and the Revenue Cutter Service, now the Coast Guard, and the Customs Service were in the Treasury Department. In later years, however, the situation of having a more or less independently functioning and scientific organization under the principal fiscal agency of the Federal Government became, ostensibly at least, somewhat of an anomaly; but, no doubt, largely because it did operate as an independent organization, and because its functions bore no relation to fiscal matters, its administration was only routinely affected by being under the general supervision of the Treasury.

The remarkable growth and evolution of the Public Health Service in accordance with the development of public health science attest the fact that there was no destructive interference or obstructive direction by the fiscal heads of the department under which it operated. They, no doubt, have realized that, as it consisted of medical, engineering, and other scientific personnel, and as its work was best understood by its own administrators, its path of progress would be less impeded and its administration best be served by the minimum amount of direction and restriction by those unqualified in the particular and specialized field.

For the most part, during the history of the Service as a real public health organization, the Secretaries of the Treasury and the Under Secretaries in direct charge have been helpful and sympathetic. There were exceptions, and the action taken in some of these cases appeared unjustified at the time, and proved stultifying later, especially in view of more recent developments. On one occasion officers of the Public Health Service prepared a simple, instructive bulletin on the venereal diseases, intended for the use of merchant seamen, who then, as in the early days, crowded the marine hospitals with cases of syphilis and gonorrhea. The material was prepared with much care and thought, and was worded inoffensively. But the copy for the publication was returned from the Office of the Secretary of the Treasury, disapproved, with the comment that "The matter con-

tained in this bulletin is not in keeping with the dignity of the fiscal department of the Government." On another occasion there was a tendency to suppress certain scientific reports of importance to the public health on the grounds that certain commercial interests might be offended. On the whole it can be said, however, to the credit of the heads of the Treasury Department, that the progress and successful functioning of the Public Health Service has been due in large part to their sympathetic understanding, their ability, and their forward-looking attitude toward the developing science of public health.

Under the authority of the act (Public No. 19, 76th Cong.) cited as the "Reorganization Act of 1939," approved April 3, 1939, the President submitted to Congress the first plan on Government reorganization on April 25, 1939. The act provides that the reorganization plans submitted by the President shall take effect—

upon the expiration of 60 calendar days after the date on which the plan is transmitted to the Congress, but only if during such 60-day period there has not been passed by the two Houses a concurrent resolution stating in substance that the Congress does not favor the reorganization plan.

The first plan on Government reorganization was transmitted to Congress by the President on April 25, 1939, part 2 of which, creating the Federal Security Agency, reads as follows:

Studies heretofore made by me and researches made at my direction, as well as recommendations submitted by me to the Congress, and especially those contained in my message of January 12, 1937, indicate clearly that to carry out the purposes of the Reorganization Act of 1939 to group, coordinate, and consolidate agencies of the Government according to major purposes, and to reduce the number of agencies by consolidating those having similar functions under a single head, would require the provision of 3 general agencies in addition to the 10 executive departments.

It is my objective, then, by transfer, consolidation, and abolition to set up a Federal Security Agency, a Federal Works Agency, and a Federal Loan Agency, and then to distribute among the 10 executive departments and these 3 new agencies, the major independent establishments in the Government (excepting those exempt from the operations of the act) in order to minimize overlapping and duplication, to increase efficiency, and to reduce expenditures to the fullest extent consistent with the efficient operation of the Government.

I find it necessary and desirable to group in a Federal Security Agency those agencies of the Government, the major purposes of which are to promote social and economic security, educational opportunity, and the health of the citizens of the Nation.

The agencies to be grouped are the Social Security Board, now an independent establishment, the United States Employment Service, now in the Department of Labor, the Office of Education, now in the Department of the Interior, the Public Health Service, now in the Treasury Department, the National Youth Administration, now in the Works Progress Administration, and the Civilian Conservation Corps, now an independent agency.

The Social Security Board is placed under the Federal Security Agency, and at the same time the United States Employment Service is transferred from the

Department of Labor and consolidated with the unemployment compensation functions of the Social Security Board in order that their similar and related functions of social and economic security may be placed under a single head and their internal operations simplified and integrated.

The unemployment compensation functions of the Social Security Board and the employment service of the Department of Labor are concerned with the same problem, that of the employment, or the unemployment, of the individual worker. Therefore, they deal necessarily with the same individual. These particular services to the particular individual also are bound up with the public-assistance activities of the Social Security Board. Not only will these similar functions be more efficiently and economically administered at the Federal level by such grouping and consolidation, but this transfer and merger also will be to the advantage of the administration of State social-security programs and result in considerable saving of money in the administrative costs of the governments of the 48 States, as well as those of the United States. In addition to this saving of money there will be a considerable saving of time and energy, not only on the part of administrative officials concerned with this program in both Federal and State Governments, but also on the part of employers and workers, permitting through the simplification of procedures a reduction in the number of reports required and the elimination of unnecessary duplication in contacts with workers and with employers.

Because of the relationship of the educational opportunities of the country to the security of its individual citizens, the Office of Education with all of its functions, including, of course, its administration of Federal-State programs of vocational education, is transferred from the Department of the Interior to the Federal Security Agency. This transfer does not increase or extend the activities of the Federal Government in respect to education, but does move the existing activities into a grouping where the work may be carried on more efficiently and expeditiously, and where coordination and the elimination of overlapping may be better accomplished. The Office of Education has no relationship to the other functions of the Department of the Interior.

The Public Health Service is transferred from the Treasury Department to the Federal Security Agency. It is obvious that the health activities of the Federal Government may be better carried out when so grouped than if they are left in the Treasury, which is primarily a fiscal agency, and where the necessary relationships with other social security, employment, and educational activities now must be carried on by an elaborate scheme of interdepartmental committee work.

The National Youth Administration is transferred from the Works Progress Administration to the Federal Security Agency since its major purpose is to extend the educational opportunities of the youth of the country and to bring them through the processes of training into the possession of skills which enable them to find employment. Other divisions of the Federal Security Agency will have the task of finding jobs, providing for unemployment compensation, and other phases of social security, while still other units of the new agency will be concerned with the problem of primary and secondary education, as well as vocational education and job training and retraining for employment. While much of the work of the National Youth Administration has been carried on through work projects, these have been merely the process through which its major purpose was accomplished, and, therefore, this agency under the terms of the act should be grouped with the other security agencies rather than with the work agencies.

For similar reasons the Civilian Conservation Corps, now an independent establishment, is placed under the Federal Security Agency because of the fact that its major purpose is to promote the welfare and further the training of the

individuals who make up the corps, important as may be the construction work which they have carried on so successfully. The Civilian Conservation Corps is a small coordinating agency which supervises work carried on with the cooperation of several regular departments and independent units of the Government. This transfer would not interfere with the plan of work heretofore carried on but it would enable the Civilian Conservation Corps to coordinate its policies, as well as its operations, with those other agencies of the Government concerned with the educational and health activities and with human security.

A concurrent resolution opposing the plan was defeated in the House on May 3, 1939, making any action on it by the Senate unnecessary. The 60-day period terminated on June 24, 1939, on which date the plan, without further action, would have become effective; but a joint resolution was passed by the Senate on May 19, and, with an amendment, by the House on June 1, 1939, deferring the effective date to July 1, 1939. The amendment was agreed to by the Senate on June 5, and the joint resolution was signed by the President on June 8, 1939.

There are always, quite naturally, and no doubt more often stimulated by some degree of sentimentality, regrets on breaking long and pleasant associations; but a turn has been passed opening up the promising vista of a new era of public health, and it is hoped that the future association of the Public Health Service with other agencies concerned with the health and welfare of the people will prove mutually pleasant and beneficial.

EXPERIMENTAL ROCKY MOUNTAIN SPOTTED FEVER AND ENDEMIC TYPHUS TREATED WITH PRONTOSIL OR SULFAPYRIDINE [1]

By NORMAN H. TOPPING, *Assistant Surgeon, National Institute of Health, United States Public Health Service*

Since chemotherapy is being used so extensively in the treatment of a wide variety of infectious diseases, it was believed advisable to test in the laboratory the action of two of the most popular chemotherapeutic agents on Rocky Mountain spotted fever and endemic typhus. Guinea pigs were used for these tests. For convenience the soluble sulfanilamide (Prontosil) and sulfapyridine were selected. It was possible to inject both of these drugs subcutaneously each day in dosages that should have been effective.

It is realized that the testing of therapeutic agents in animals is beset with difficulties and may lead to erroneous conclusions when attempts are made to apply them to man; however, in sporadic diseases such as spotted fever and endemic typhus the difficulties in collecting a sufficiently large series of human cases to justify an opinion as to the therapeutic value of a given drug is evident. The

[1] From the Division of Infectious Diseases.

two infections (Rocky Mountain spotted fever and endemic typhus) run characteristic courses in guinea pigs. Following a definite incubation time there is a febrile period, usually accompanied by a scrotal reaction. With the strain of spotted fever used in these tests, death occurs in over 90 percent of the guinea pigs. Male guinea pigs (approximately 500 gm. in weight) were used.

METHODS

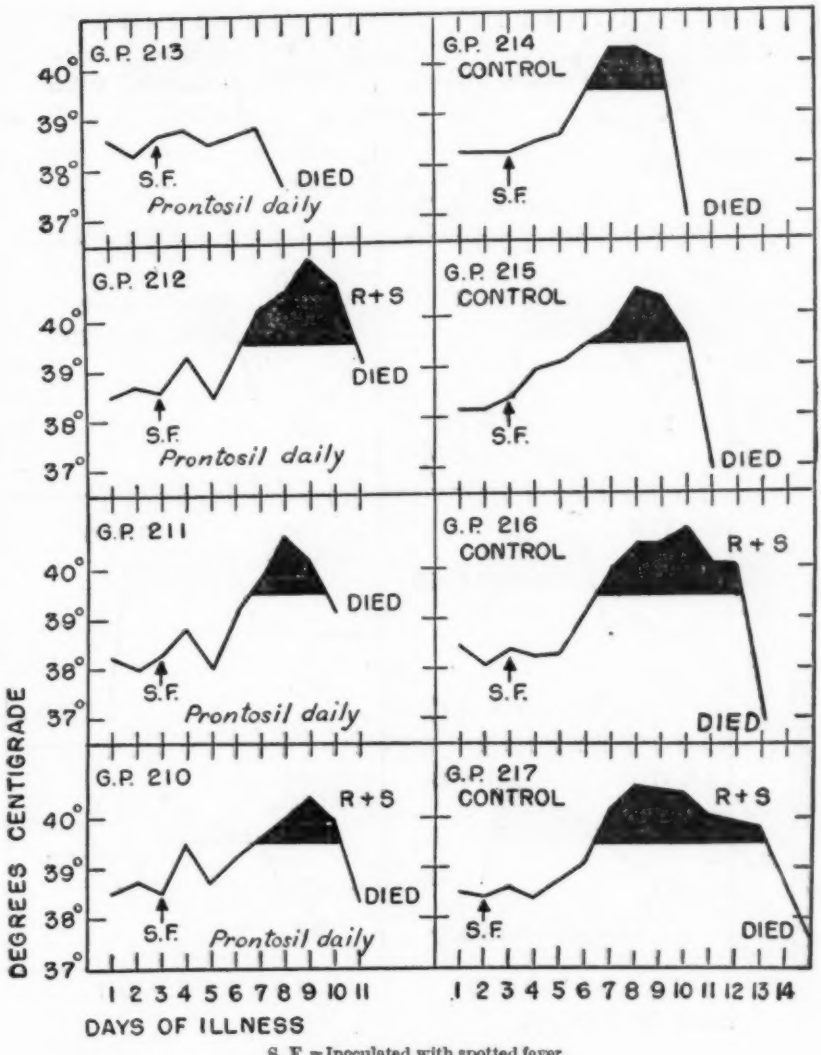
Three sets of four guinea pigs each were set up for each drug under test in each of the two rickettsial diseases. Only Prontosil was tested in typhus. One set of four guinea pigs was given the drug alone; the second set was inoculated with infectious material and then given daily injections of the drug, and the third set was inoculated with the infectious material alone. Daily temperatures were taken on all of the animals, and observations were made on the appearance of the characteristic scrotal reactions.

In none of the control guinea pigs receiving either Prontosil or sulfapyridine alone was there any gross evidence of toxicity. The animals were alive and well at the termination of the experiment. The daily dosage of each of the drugs was 0.3 gm. The Prontosil was dissolved in saline so that 10 cc. equaled 0.3 gm. The sulfapyridine was emulsified in a sterile 1 percent gelatin solution. Daily subcutaneous injections were made beginning the same day that the animals were inoculated with strains of guinea-pig passage virus.

The accompanying temperature charts show the course of the disease in the test guinea pigs. These charts are briefly summarized in table 1 for spotted fever and in table 2 for endemic typhus.

TABLE 1.—*Rocky Mountain spotted fever*

Guinea pig No.	Status	Time in days			
		Incubation	Fever	Appearance of scrotal reaction	Death
214	Spotted fever	3	3	None	7
215	do	3	4	None	8
216	do	4	5	8	11
217	do	4	7	9	13
210	Spotted fever and Prontosil	4	4	7	8
211	do	3	3	None	7
212	do	4	4	8	8
213	do	(?)	None	None	5
182	Spotted fever	3	5	7	7
183	do	3	4	7	7
184	do	3	5	7	8
185	do	2	5	7	8
174	Spotted fever and sulfapyridine	3	5	7	7
175	do	3	3	None	6
176	do	3	4	7	7
177	do	3	4	7	7

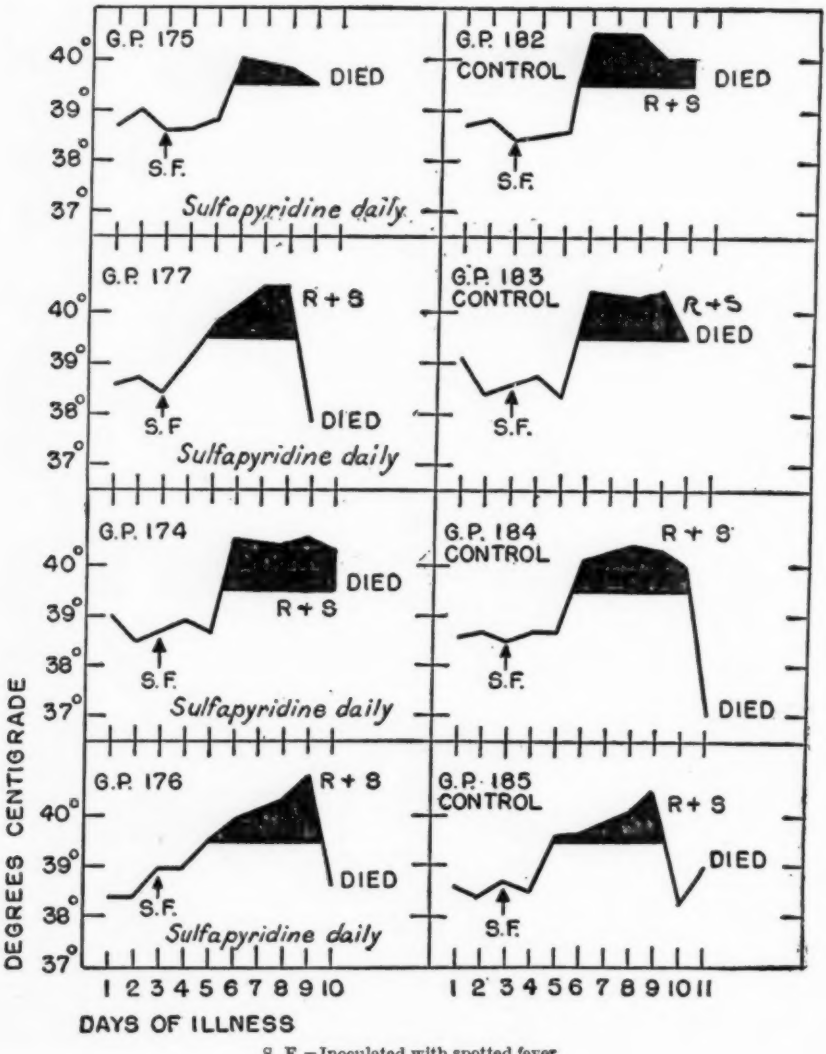


S. F. = Inoculated with spotted fever.
R+S = Scrotal redness and swelling.

TABLE 2.—*Endemic typhus*

Guinea pig No.	Status	Time in days				
		Incubation	Fever	Appearance scrotal reaction	Disappearance scrotal reaction	Death
218	Endemic typhus	5	4	5	12	(1)
219	do	6	3	6	12	(1)
220	do	5	2	5	12	(1)
221	do	5	2	5	12	(1)
222	Endemic typhus and Prontosil	5	5	5	11	(1)
223	do	4	7	6	10	(1)
224	do	5	6	7	9	13
225	do	7	2	None	None	(1)

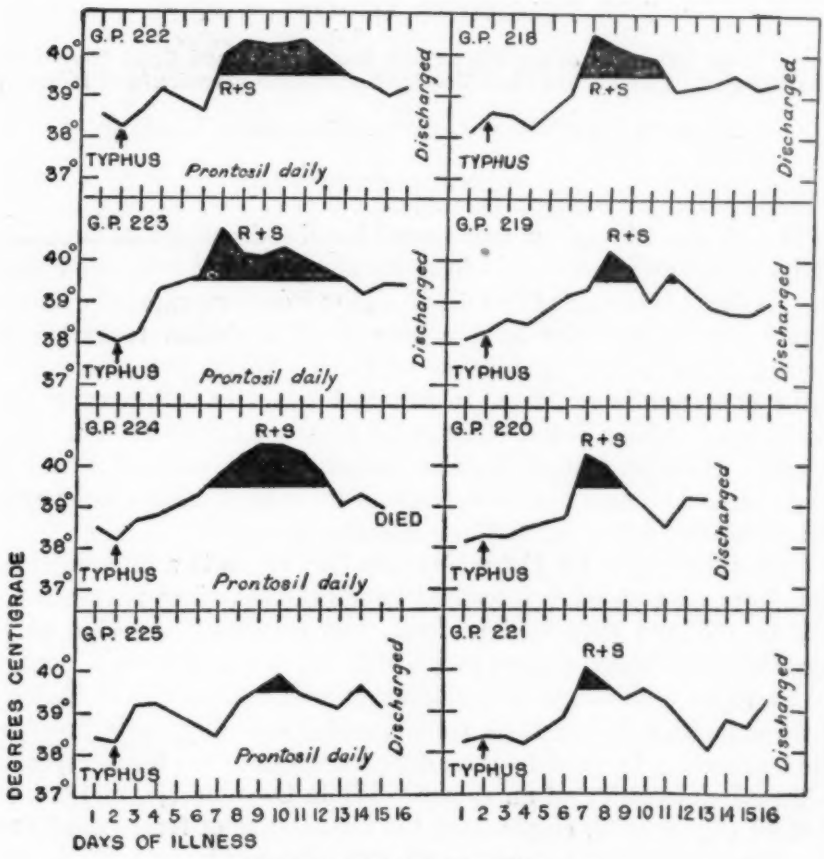
[1] No deaths.



S. F. = Inoculated with spotted fever.
R+S = Scrotal redness and swelling.

DISCUSSION

Since there was no lengthening of the incubation period, survival time, or the appearance of scrotal reactions in the guinea pigs, it is believed that sulfapyridine or Prontosil offer little hope in the treatment of either Rocky Mountain spotted fever or endemic typhus. Actually from these data the treated guinea pigs infected with spotted fever virus did not live as long as the controls with spotted fever alone, and in typhus the febrile period of the treated pigs was longer and there was one death in the group, which is unusual with the strain used.



R+S = Scrotal redness and swelling.
Arrow indicates inoculation with typhus fever.

CONCLUSIONS

In guinea pigs infected with passage virus of Rocky Mountain spotted fever and endemic typhus and treated with Prontosil, no benefit could be demonstrated; in fact, these guinea pigs did not do as well as the controls receiving infectious material and not treated. This also is true with sulfapyridine in spotted fever.

These experiments indicate that these two drugs should not be used in the treatment of typhus and Rocky Mountain spotted fever.

THE DIAGNOSIS OF OXYURIASIS

Comparative Efficiency of the NIH Swab Examination and Stool Examination by Brine and Zinc Sulfate Floatation for *Enterobius vermicularis* Infection

By Willi Sawitz, Vada L. Odom, and David R. Lincicome [1]

INTRODUCTION

The studies of various techniques for the discovery of protozoan and helminthic infections in feces by the Tulane Amebiasis Unit of the National Institute of Health (*1*, *2*) have demonstrated the marked superiority of the zinc sulfate centrifugal-floatation technique for routine laboratory examination of feces. While the efficiency of brine floatation is restricted to helminth ova, zinc sulfate centrifugal floatation has been found efficient for protozoan cysts as well as helminths. Further test of the zinc sulfate centrifugal-floatation technique seemed necessary to determine its comparative efficiency for detecting *Enterobius vermicularis* infections.

The diagnosis of an *Enterobius* infection presents a different problem from that of other intestinal helminthiases, since pinworm eggs are usually not deposited in feces, but rather on the skin of the perianal folds during the migration of the female worm, most commonly at night. Although this migration was known before his time, Küchenmeister (*3*), in 1855, recommended as a diagnostic procedure that attention be paid to the adult worms in or on feces, especially after administration of an enema. While Davaine (*4*), in 1858, and Lambl (*5*), in 1859, emphasized the importance of fecal examination for the diagnosis of helminthic infection, it was Davaine (*6*), in 1860, and Vix (*7*), in 1860, who called attention to the anal region as the optimum site for detecting *Enterobius*. In searching for the adult worms in the perianal region Vix (*7*) sometimes found them living, dead, dried, and often distorted. This distortion necessitated microscopic examination for accurate diagnosis. Vix (*7*) stated: "Diesem Unstande verdanken wir die für uns neue Entdeckung, dass auch in Fällen, in welchen das unbewaffnete Auge und selbst die Lupe in dem Schleime des Anus nichts mehr von Würmern nachzuweisen vermag, nicht nur die Diagnose auf Vorhandensein von Oxyuris vermic., sondern von allen in dem menschlichen Darme vorkommenden Entozoen zu stellen möglich ist, nämlich durch den, mittels microscopischer Untersuchung des Darmschleimes des Rectums und Anus gelieferten Nachweis freier Wurmeier." According to Vix, the material for examination was best obtained by means of a scalpel handle made of ivory, with edges not too sharp, a half-blunt lanceolate end of a plaster spatula, or a probe or curette. In 1876, Heller (*8*)

[1] Tulane Amebiasis Unit, National Institute of Health, in collaboration with the Parasitology Laboratory, Department of Tropical Medicine, Tulane University, New Orleans, La.

recommended the use of a spatula or the examination of material from any piece of paper that might have been used after defecation. Although various types of anal scrapers or swabs (curettes, spoons, glass tubes, glass rods, metal, wooden or glass spatulas, matches, cotton pledgets, etc.) were used in special investigations during the succeeding decades, the first practical, efficient technique for the detection of *Enterobius* was devised by Hall, in 1937 (*9*).

In the present study the comparative efficiencies of the zinc sulfate centrifugal-floatation technique, the brine centrifugal-floatation technique and Hall's cellophane-tipped glass rod (NIH swab) have been tested.

SOURCES OF MATERIAL

The subjects of this investigation were children of a charitable institution in New Orleans, La. The home was a commodious, relatively new, clean, suburban building, with a swimming pool and extensive lawns. The children themselves were kept clean and many bathrooms and showers were available and regularly used under the supervision of the Sisters in charge. The children looked healthy and presented no evidence of a widespread *Enterobius* infection. In 1935, examination of fecal samples from this institution by the direct fecal film and centrifugation techniques had revealed an incidence of about 6 percent *Enterobius* infection (unpublished records of E. C. Faust). The group in the home consisted of 136 white children. One hundred and nine were boys and 27 were girls with ages ranging from 6 to 14 years. All of the children were examined by the NIH swab method and 131 of them by both the brine and zinc sulfate centrifugal-floatation techniques. The study was carried out during the month of August 1938.

TECHNIQUES USED IN THE PRESENT STUDY

Stools of the children were examined by both the brine and the zinc sulfate centrifugal-floatation techniques.

For the brine examination an approximately 1-in-5 fecal suspension was prepared by straining into a glass jar 2 grams of feces together with 8 cc. of distilled water through a metal sieve provided at its base with a brass screen having 40 wires to the linear inch. Two cc. of this suspension were pipetted into a Wassermann tube, the top of which had been ground flat. Water was added and the preparation centrifugalized for 45 seconds at a speed of 2,640 revolutions per minute (International Clinical Centrifuge). The supernatant fluid was decanted, water added, the sediment broken up by shaking, and the preparation recentrifugalized. This procedure was repeated 3 times. After the last supernatant fluid was poured off, brine with a specific gravity of 1.200 was added, the sediment shaken, and a coverglass carefully

placed on top of the brim-full Wassermann tube. The coverglass was held in place by upwardly projecting metal fingers fused on a metal sleeve attached to the supporting metal centrifuge tube (adaptation of Lane's technique). After 45 seconds of centrifugation at 2,640 revolutions per minute the coverglass was removed and placed on a slide for examination.

For the zinc sulfate centrifugal-floatation examination 2 cc. of the fecal suspension were prepared as described for the brine technique, but zinc sulfate solution having a specific gravity of 1.180 was added instead of brine. After centrifugation for 45 seconds at 2,640 revolutions per minute the levitated material was removed from the surface film onto a slide by means of a bacteriological wire loop.

The stool examination was repeated on some of the children in whom the first examination was negative. The time elapsing between the examinations varied from 3 to 8 days. The stools were usually passed soon after NIH swabs had been taken.

The NIH swabs were made on the children in the morning, before they had their showers and usually before they had defecated. The method of using the swabs was that recommended by Hall (*9*). The cellophane with the adherent mucus and/or fecal material was placed face downwards on a slide in a drop of physiological salt solution and flattened with a second slide in a metal compressor. All slides were examined for *Enterobius* eggs under a compound microscope with a magnification of 144.

In cases where the anal swab examinations were negative, they were repeated up to 10 times. The time elapsing between examinations was 1 or 2 days.

PRESENTATION OF DATA

The total number of *Enterobius* positives found by all techniques was 131 of the 136 children examined, i. e., an incidence of 96.3 percent. Of the 109 boys, 105 were found to be infected, an incidence of 96.3 percent, while 26 of the 27 girls showed pinworm eggs, also an incidence of 96.3 percent.

Five children were examined only by the NIH swab technique. Of these, 2 boys were positive for pinworms on the first swabbing, 2 girls were negative on the first and positive on the second swabbing, and the third girl was negative on 6 successive swabbings.

For the purpose of comparing the efficiency of the 3 techniques studied for the detection of *Enterobius* infection, only the findings in the 131 children who were examined by all 3 techniques will be considered.

FECAL EXAMINATIONS

The first brine centrifugal-floatation examination provided 18 positives, an incidence of 13.7 percent. Nineteen stools from the remaining 113 negative children were examined a second time and 4 additional positive cases were found.

The first zinc sulfate centrifugal-floatation examination showed 23 positives (14 of them were positive and 9 negative with the brine technique), an incidence of 17.6 percent. Sixteen stools of the remaining 108 negative children were re-examined and 3 more positives were found.

SWAB EXAMINATIONS

The first swab examination gave 94 positives, an incidence of 71.8 percent. Sixty-nine of the 94 were found on swab examination only, 3 by both swab and brine techniques, 8 by both swab and zinc sulfate techniques, and 14 by all 3 methods.

The second swab examination detected 13 more positives among the 37 children negative on first swab examination, raising the total number of positives to 107 and the incidence to 81.7 percent.

The third examination detected 7 positives among the remaining 24 negatives, raising the total to 114 positives and the incidence to 87.0 percent.

The fourth examination detected 1 positive among the remaining 17 negatives, raising the total to 115 positives and the incidence to 87.8 percent.

The fifth swab test detected 6 positives among the remaining 16 negatives, raising the total to 121 positives and the incidence to 92.4 percent.

The sixth examination detected 4 positives among the remaining 10 negatives, raising the total to 125 positives and the incidence to 95.4 percent.

The seventh test detected 1 positive among the remaining 6 negatives, raising the total to 126 positives and the incidence to 96.2 percent.

One case was found by the zinc sulfate technique alone, which was not found on 10 swab examinations and one brine examination. Only a single brine examination was made of the feces in this case.

The percentages of the total positives found by the respective techniques are summarized below.

FINDINGS

Of the 131 children examined by all 3 techniques, 127 were found to be positive (126 on swabs and 1 by zinc sulfate technique alone), an incidence of 96.9 percent.

The first brine examination detected 18, 14.2 percent of the positives. The first zinc-sulfate examination detected 23, 18.1 percent of all positives. The first swab examination detected 94, 74.0 percent of all positives. The second swab examination detected an additional 13. Thus, 2 swab examinations detected 84.2 percent of all positives. The third detected an additional 7. Thus, 3 swab examinations detected 89.7 percent of all positives. The fourth detected 1 additional case. Thus, 4 swab examinations detected 90.5 percent of all positives. The fifth detected an additional 6. Thus, 5 swab examinations detected 95.2 percent of all positives. The sixth detected an additional 4. Thus, 6 swab examinations detected 98.4 percent

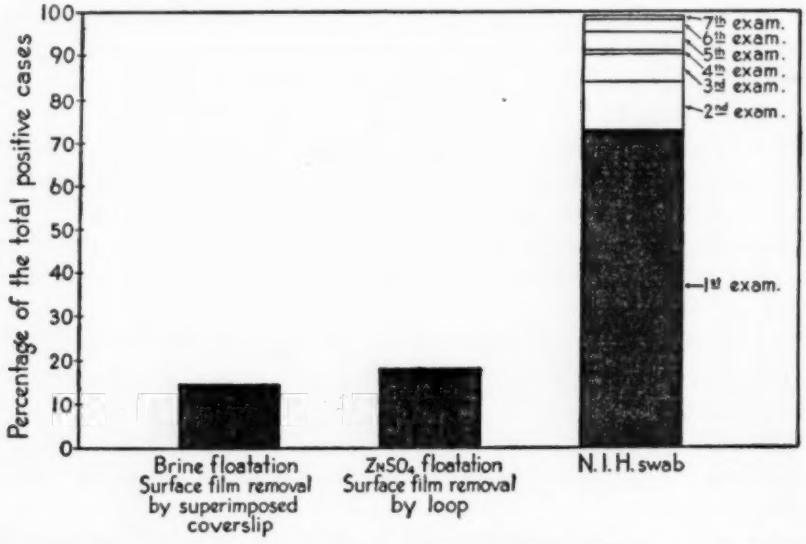


FIGURE 1.—Comparison of *Enterobius* egg findings by brine and $ZnSO_4$ floatations in stools and by the NIH swab technique in 136 children.

of all positives. The seventh detected 1 additional case. Thus, 7 swab examinations detected 99.2 percent of all positives. The eighth, ninth, and tenth swab examinations were all negative.

The comparative findings are presented diagrammatically in figure 1.

DISCUSSION

The detection of 14.2 percent of the total positives by the brine centrifugal-floatation technique, 18.1 percent by the zinc sulfate centrifugal-floatation technique, and 74.0 percent by the NIH swab technique on first examination shows the definite superiority of the NIH swab technique as a means of detecting *Enterobius* infection.

In 1914, Schmidt (*10*) in Rostock, Germany, found 25 cases positive for pinworm eggs in material scraped from the perianal region by

means of a small metal spoon. Only 3 of these 25 were diagnosed on the direct fecal film.

In 1925, Skrjabin (*11*), in the Donetz region, Union of Soviet Socialist Republics, obtained positive findings for pinworm eggs in 3.5 to 12.0 percent of a group of individuals by examination of feces only, whereas the examination of perianal material showed 35.4 to 67.0 percent positive. In 1927, Serbinow and Schulmann (*12*) examined the stools of 71 children in Charkow, Union of Soviet Socialist Republics, by the brine floatation technique and found 3.5 percent positive; in another group of 42 children, none was positive. A re-examination of these subjects, using a pointed, spatula-shaped match as a perianal scraper, gave an incidence of 33.3 and 10.9 percent, respectively. In 1929, Bogojawlenski and Lewitzki (*13*) found the incidence of *Enterobius* on examination of perianal material obtained with a moistened match to be 5 times higher than they were able to detect in the stools by using Fülleborn's and Teleman's concentration techniques. However, the perianal examinations were done on military conscripts, whereas the stool examinations were done on clinic patients, although both lived in the same area.

In 1935, Headlee (*14*) examined 206 individuals at the Kankakee State Hospital (Illinois) by means of the direct fecal film, Willis' brine technique, and the examination of perianal scrapings. Only one examination by each of the techniques was done. The direct fecal films were negative, the brine technique detected an incidence of 6.19 percent infection and the examination of perianal material a 35.16 percent infection.

In 1937, Wright and Cram (*15*), in an examination of 102 persons known to be infected with pinworms, found the eggs in feces in only 14 cases. In 1937, Cram, Jones, Reardon, and Nolan (*16*) examined 17 individuals. The stool examination by brine floatation detected 2 positives; the swab technique found all 17 to be positive. In 22 other cases, the brine technique discovered 2 positives, the swab, none. In a third group of 6 individuals, none was found positive by the brine technique, while all 6 were positive on anal swab examination. Of a fourth group of 17 persons positive on swabs, only one was found positive by stool examination. In summary, of 62 cases examined, 5, or 8.06 percent, were positive by the brine technique and 40, or 64.52 percent, on a single swab examination. In the first two groups, several swabs usually were examined for each subject; in the third and fourth group, only one was examined.

Gill, Smith, and McAlpine (*17*) examined 637 white individuals of various ages up to 70 years. Willis' salt floatation technique detected 16 positives, an incidence of 3.9 percent; the first NIH swab detected 304 positives, an incidence of 47.7 percent. Consecutive swab examinations detected 109 more positives, thus providing a total inci-

dence of 64.8 percent. The number of swab examinations made was not stated.

In table 1 the incidence percentages detected by stool and swab examinations by the authors cited above are compared to show the efficiency of the respective techniques employed.

TABLE 1.—*Comparative efficiency of the direct fecal film, the brine and zinc sulfate centrifugal-floatation techniques, and the scraper or swab technique for the detection of* Enterobius *infection (based on incidence percentage)*

Author	Number examined	Percent positive with the following techniques—				Calculated ratios
		Direct fecal film	Brine	$ZnSO_4$	Single scraper or swab examined	
Schmidt, 1914 (*10*)	25	12			100	
Skrjabin, 1925 (*11*)			3.5–12.0		35.4–67.0	1:6.7
Serbinow and Schulmann, 1927 (*12*)	71 42 113		3.8 0 2.2		33.5 10.9 29.2	1:13.2
Bogojawlenski and Lewitzki, 1929 (*13*)						1:5
Headlee, 1935 (*14*)	206	0	6.19		35.16	0:1:6
Wright and Cram, 1937 (*15*)	102		13.7		100	1:7.3
Cram, Jones, Reardon, Nolan, 1937 (*16*)	62		8.06		64.52	1:8
Gill, Smith, McAlpine, 1938 (*17*)	637		3.9		47.7	1:12.3
Sawitz, Odom, Lincicome, 1938 (present paper)	131		13.7	17.6	71.8	1:1.2:5.2

On the basis of the ratios calculated from the comparative findings of the workers cited in table 1, it may be concluded that, for every 6 *Enterobius*-infected individuals detected by the perianal swab technique, few, if any, are found on the direct fecal film, 1 by the brine technique, and at least 1 by the zinc sulfate centrifugal-floatation technique.

Necessity for repeated swab examinations.—While the first swab examination in our series detected an incidence of 71.8 percent infection, additional swab examinations increased this incidence to 96.2 percent. As early as 1914 Schmidt (*10*), who rediscovered the perianal technique of detecting *Enterobius* infections, noted that repeated examinations revealed additional infections. He tested the technique on 100 children and adults known to be infected from the recovery of the adult worms. Eighty-seven of these were diagnosed in the first material scraped from the perianal region by means of a metal spoon. Nine more were found by the second examination immediately following, and 2 more by a third examination after the perianal regions were moistened with wet cotton. Several workers later confirmed the value of repeated examinations. The findings of those workers who made more than one examination of perianal material in their surveys are shown in table 2. The percentage incidence is computed from the data given in the respective papers. The papers of Bogojawlenski and Demidova (*18*), who made 7 examinations, and Bodrogi (*19*), who made 6 examinations, were not available for analysis.

TABLE 2.—*Increase in pinworm infections detected by repeated examinations of perianal material*

Author	Year	Country	Means for obtaining perianal material	Number of individuals examined	Incidence percentage after the following numbers of examinations—							
					1	2	3	4	5	6	7	8
Skrjabin (*11*)	1925	Soviet Russia	Match	(?) (children)	44.2	75.0	84.6	94.4	------	------	------	------
Serbinow and Schulmann (*12*)	1927	------do	------do	71 (children)	10.9	26.7	46.5	52.1	------	------	------	------
Serbinow and Schulmann (*12*)	1927	------do	------do	42 (children)	33.3	61.9	69.0	------	------	------	------	------
Schulmann (*12*)	1927	------do	------do	117 (adults)	54.3	67.5	74.3	82.9	84.6	------	------	------
Cram, Jones, Reardon and Nolan (*16*)	1937	United States	NIH swab	49 (children and adults)	30.6	42.8	55.0	59.1	------	------	------	------
Bozicevich and Brady (*20*)	1938	------do	------do	319 (children)	41.4	52.0	56.4	65.2	------	------	------	------
Gill, Smith, and McAlpine (*17*)	1938	------do	------do	637 (ages up to 70 years)	47.2	[1] 64.8	------	------	------	------	------	------
Sawitz, Odom, and Lincicome (present paper)	1938	------do	------do	131 (children)	71.8	81.7	87.0	87.8	92.4	95.4	96.2	96.2

[1] A total of 64.8 percent infection was found. The number of examinations was not stated.

The data in table 2 are shown graphically in figure 2. The curves in this figure show that the actual incidence of *Enterobius vermicularis* varied in these surveys, owing to the fact that they represent different population groups in different countries, sometimes even selected individuals. The highest incidence was found in a group of institutionalized children, 6 to 14 years of age, reported in this paper. Each curve shows an increase in incidence on repeated examinations. Cram, Jones, Reardon, and Nolan (*16*), in their series of 628 individ-

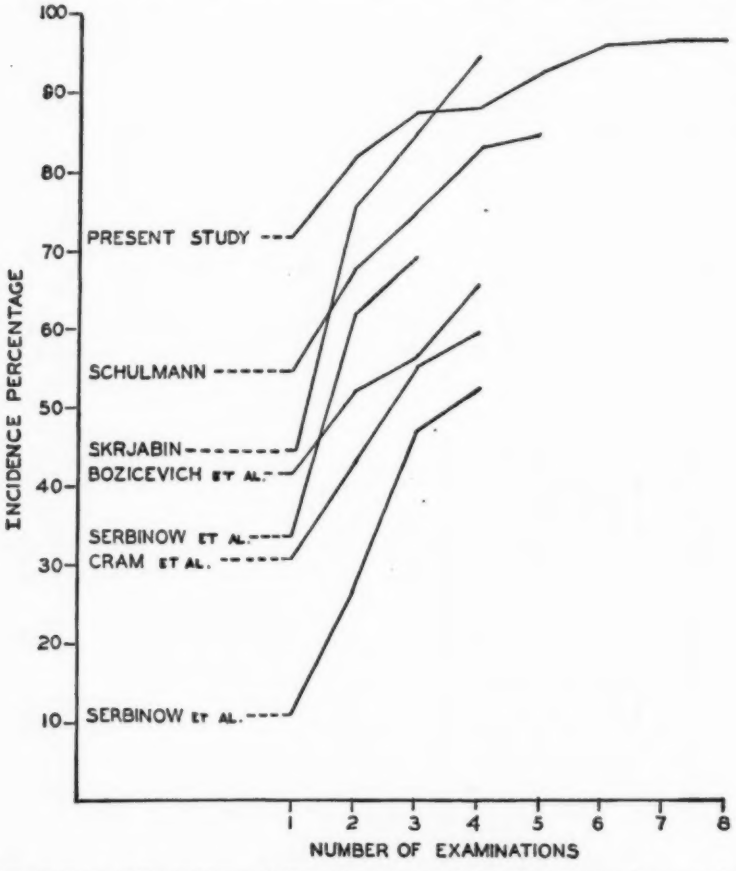


FIGURE 2.—Increase of the incidence of *Enterobius vermicularis* infection discovered on repeated swab examinations.

uals, found no positive case after the sixth swab; we found none after the seventh. Thus, at least 7 NIH swab examinations seem necessary to insure a negative diagnosis.

SUMMARY AND CONCLUSIONS

1. An incidence of 96.3 percent infection with *Enterobius vermicularis* has been found in an institutionalized group of 136 white children in New Orleans.

2. The incidence in 109 boys was 96.3 percent; that in 27 girls was also 96.3 percent.

3. One hundred and thirty-one children were examined by the NIH swab method, and their stools were examined simultaneously by the brine and zinc sulfate centrifugal-floatation techniques. The superiority of the NIH swab technique is shown by the fact that the first swab examination detected an incidence of 71.8 percent, whereas stool examinations by brine and zinc sulfate floatations detected an incidence of only 13.7 and 17.6 percent, respectively.

4. Repeated swab examinations, up to 7 times, each revealed additional infected children. Further examinations on the remaining negative children were negative, thus supporting the view that at least 7 swab examinations are necessary before the absence of pinworm infection is assured.

ACKNOWLEDGMENTS

This study was made possible through the kind permission of Dr. Maud Loeber, medical supervisor of the children examined, and through the collaboration of the Mother Superior and the Sisters of a children's home in New Orleans. We wish to express our sincere thanks for their cooperation.

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THE OCCURRENCE OF SPONTANEOUS AND INDUCED PULMONARY AND LIVER TUMORS IN STRAIN C_3H MICE [1]

By H. B. Andervont, *Senior Biologist, United States Public Health Service*

The occurrence of lung and liver tumors in strain C_3H mice following the injection of dibenzanthracene has been described in previous publications (*2, 4*). According to reports from this (*6*) and other (*7, 9*) laboratories spontaneous lung and liver tumors had been rarely observed in normal mice of this strain, but the possibility was mentioned (*2*) that C_3H mice may inherit a tendency to develop these types of tumor late in life and that the carcinogenic agent accelerates their appearance. It became essential, therefore, to accumulate information concerning the incidence of spontaneous pulmonary and liver growths in mice of this strain. The presence of spontaneous lung and liver tumors in a few older C_3H mice which were raised in this laboratory has been recorded in a recent paper (*6*) and further data are included in this report.

Strain C_3H was originated by Strong (*9*) in 1920, and it has been shown that both the breeding (*3*) and nonbreeding (*5*) females have a high incidence of spontaneous breast tumors. A colony of these mice was established at this laboratory in 1930 and, as stated previously (*3*), all are descendants of a female and male of Strong's colony. The

[1] From the Office of Cancer Investigations, U. S. Public Health Service, Gibbs Memorial Laboratory, Harvard University, Cambridge, Mass.

information presented herein was obtained from mice dying or killed since January 1, 1937, and is summarized in table 1.

TABLE 1.—*Incidence of spontaneous liver and pulmonary tumors in strain C_3H mice*

Mice	Age in months																	Total
	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Female:																		
Number examined	10	17	26	34	9	20	15	11	7	4	4	2	1	6	2	2	2	171
Number with liver tumor	0	0	0	0	0	2	1	1	1	1	0	1	1	2	0	0	0	10
Number with lung tumor	0	0	0	0	1	0	0	1	0	1	0	0	0	3	0	1	0	7
Male:																		
Number examined	5	0	15	13	13	35	0	19	---	---	---	13	---	---	---	---	---	113
Number with liver tumor	0	0	0	1	1	7	0	5	---	---	---	5	---	---	---	---	---	19
Number with lung tumor	0	0	1	0	0	2	0	0	---	---	---	2	---	---	---	---	---	5

Most of the female mice included in table 1 had developed mammary cancer before coming to autopsy and the majority were virgins. It is seen that liver growths were not noted in any female mouse less than one year of age, and of 85 mice one year of age or older 10, or 11.7 percent, had liver tumors at an average age of 16.9 months. It is also seen that spontaneous pulmonary tumors are found in females of this strain and it is essential to note that all the lung tumors recorded in table 1 arose in mice which were free from mammary tumor.

Strain C_3H males have been used extensively for experimental purposes and a relatively small number were kept as normal animals until one year of age or older. In table 1 it is seen that a liver growth was found in one normal male mouse at 11 months of age, and of 80 animals one year of age or older, 18, or 22.5 percent, had hepatomas at an average age of 15.1 months. The data in table 1 suggest that male C_3H mice are more susceptible to spontaneous hepatoma than are females of the strain in that the tumors occur earlier in the male animals.

Only 5 spontaneous pulmonary growths were found in the males listed in the table, which indicates that C_3H mice are more susceptible to liver tumors than to lung tumors or else that liver tumors arise at an earlier average age than do lung tumors.

The occurrence of spontaneous hepatoma in C_3H mice is of interest when compared with the findings of Strong in his CBA strain of mice, which are related to the C_3H strain. In his first publication Strong (*10*) reported the occurrence of 14 spontaneous hepatomas in CBA mice, 8 of which were found in females at an average age of 22 months and 6 in males at an average age of 20.4 months. In his second paper (*11*) the tumor incidence of 81 female CBA mice was recorded. Of these 6, or 7.4 percent, developed spontaneous hepatoma at an average age of 23.1 months. In a more recent communication (*12*) it was reported that 42 mice of the CBA strain have thus far developed

spontaneous hepatoma at an average age of 20.4 months and at the same rate in both sexes. The youngest animal, recorded by Strong, in which a hepatoma was found was a female mouse 16.9 months of age.

It is apparent that so far as the occurrence of hepatomas is concerned the C_3H colony under observation in this laboratory compares favorably with Strong's CBA strain. The incidence in female C_3H mice (11.7 percent) is higher than the incidence (7.4 percent) reported for the CBA females. Furthermore, liver tumors were found in 29 C_3H mice at an average age of 15.6 months and in 42 CBA mice at an average age of 20.4 months, but these figures may mean only that the CBA mice came to autopsy at a later average age than did the C_3H animals. Further studies on the appearance of spontaneous pulmonary and liver tumors in C_3H mice are in progress.

EXPERIMENTAL

The purpose of this report is to record a series of investigations in which pulmonary and liver tumors arose in C_3H mice following injection of the carcinogenic hydrocarbons, dibenzanthracene [2] or methylcholanthrene, and to determine, if possible, whether the tumors arose spontaneously or were induced. All the C_3H mice used in the following experiments were obtained from the colony maintained in this laboratory. The dog-serum and horse-serum dispersions of the hydrocarbons were prepared by Dr. Egon Lorenz, according to the technique described in an earlier communication (*2*).

Experiment 1.—It was desired to determine the relative susceptibility of mice of strains A and C_3H to the induction of lung tumors by intravenous injections of dibenzanthracene. On October 20, 1936, 26 strain A and 16 strain C_3H male mice, all of which were 3 months old, were injected intravenously with a dog-serum dispersion of dibenzanthracene; each animal received 1 cc. of the dispersion containing 0.3 mg. of the carcinogen. The injections were repeated on October 21 and 22; thus each animal received 0.9 mg. of dibenzanthracene.

The strain A mice were sacrificed at different intervals of time from 3 to 15 months after injection, and all had multiple lung tumors. Four strain C_3H animals were sacrificed 4½ and 6 months after injection; all were free from tumor. Nine months after injection 3 more strain C_3H animals were killed and of these 1 was free from tumor, 1 had a hepatoma, and 1 had a single lung tumor and a hepatoma. On August 20, 1937, 10 months after injection, the last 5 C_3H mice were killed; all were free from liver growths, while 3 had pulmonary tumors.

[2] Throughout this communication the term dibenzanthracene means 1:2:5:6-dibenzanthracene.

The results show that strain A mice are considerably more susceptible than C_3H mice to lung tumors induced by dibenzanthracene. Lung tumors were noted in strain A mice within 13 weeks after injection and the first pulmonary growths were found in C_3H mice 39 weeks after injection. Hepatomas were observed in 2 of 8 C_3H animals killed 9 to 10 months after injection.

Experiment 2.—This experiment was undertaken to ascertain whether dibenzanthracene could lower resistance to the development of spontaneous breast tumors. On December 16, 1936, 27 strain C_3H female mice 4 to 5 months of age were each injected subcutaneously with 1 cc. of a horse-serum dispersion of dibenzanthracene containing 1 mg. of the hydrocarbon. The procedure failed to hasten the occurrence of spontaneous breast tumors, but the results are reported at this time in order to compare them with those of experiments 5 and 8 of this report in which female mice of the same strain received the carcinogen intravenously.

Between the sixteenth and twenty-ninth week after injection 25 animals developed either spontaneous breast tumor or induced tumor at the injection site, but none had either pulmonary or liver tumors. The last 2 mice survived for 47 weeks after injection; neither had developed a subcutaneous tumor and both had lung tumors.

The results indicate that 1 mg. of dibenzanthracene in a horse-serum dispersion, when injected subcutaneously into female C_3H mice, does not induce an appreciable number of pulmonary tumors within 29 weeks after injection.

Experiment 3.—On December 21, 1936, 10 three-month-old strain C_3H females were injected subcutaneously with 1 cc. of a dog-serum dispersion of dibenzanthracene containing 0.3 mg. of the carcinogen. The injections were repeated one week later.

Up to the thirty-first week after injection 3 mice had developed subcutaneous tumors without evidence of tumors in other organs. Of the 7 remaining mice 6 had primary pulmonary tumors when they came to autopsy 32 to 59 weeks after injection.

In this experiment lung tumors were induced in C_3H mice by 0.6 mg. of dibenzanthracene when injected subcutaneously as a dog-serum dispersion; the first tumor was found 32 weeks after injection. Liver growths were not found in any of these animals.

Experiment 4.—Male mice of strain C_3H were injected subcutaneously with varying amounts of methylcholanthrene dissolved in lard. The details of the experiment, which was performed in collaboration with Dr. M. J. Shear, will be described in another paper, but the occurrence of liver growths in some of the animals will be mentioned at this time.

On May 15, 1937, three groups of 2-month-old mice (12 in each group) were injected with 0.25 cc. of lard containing 0.25 mg., 0.125

mg., and 0.0625 mg. of methylcholanthrene, respectively. Between 9 and 10 months later all surviving mice were free from tumor at the injection site and all were sacrificed. Liver growths were found as follows:

Group A.—The mice had received 0.25 mg. of the hydrocarbon. Five were living and of these 2 had hepatomas.

Group B.—The animals had received 0.125 mg. of the carcinogen. Ten were living and of these 3 had hepatomas.

Group C.—The animals had received 0.0625 mg. of the hydrocarbon. Seven were living and 4 of them had hepatomas.

The results may be summarized by stating that of 22 strain C_3H male mice living 9.7 months after subcutaneous injections of methylcholanthrene 9 had developed hepatomas.

Experiment 5.—On March 9, 1937, each of 31 three-month-old strain C_3H females received an intravenous injection of 0.5 cc. of a horse-serum dispersion containing 0.5 mg. of dibenzanthracene. Since the primary purpose of the experiment was to ascertain whether the hydrocarbon hastened the occurrence of mammary tumors in these mice an equal number of litter mates were set aside as uninjected controls. The experimental and control mice developed spontaneous breast tumors at approximately the same average age.

Up to October 6, 1937, 23 of the injected mice had developed breast tumors only. The remaining 8 injected mice developed breast tumors before November 17, 1937, and of these 4 also had primary lung tumors which were noted 31 to 37 weeks after injection. None of 9 control mice developing breast tumors after October 6, 1937, had tumors within their lungs.

The results may be summarized as follows: Of 31 strain C_3H female mice injected intravenously with 0.5 mg. of dibenzanthracene 8 survived for more than 30 weeks after injection and of these 4 had pulmonary tumors.

Experiment 6.—On September 25, 1937, two-month-old mice of strain C_3H were injected subcutaneously in the right axillary region with horse-serum dispersions of dibenzanthracene or of methylcholanthrene to determine the relative susceptibility of these mice to the two hydrocarbons. The experiment was terminated 9 months later when all surviving mice free from tumor at the injection site were sacrificed. The results of this experiment are summarized in table 2.

It is seen that methylcholanthrene is more carcinogenic than dibenzanthracene when injected subcutaneously as a horse-serum dispersion. Sixteen of the dibenzanthracene-injected mice developed pulmonary tumors, the first of which was found 32 weeks after injection. All of the 6 mice sacrificed at the conclusion of the experiment were tumor-free at the injection site but all had pulmonary tumors. The occurrence of lung tumors in the dibenzanthracene-injected animals 32

weeks after injection offers an explanation for the failure of similar tumors to appear in the methylcholanthrene-injected animals, for the last methylcholanthrene-injected mouse developed a subcutaneous tumor 18 weeks after injection and was killed. A hepatoma was found in one of the male mice killed on June 30, 1938.

TABLE 2.—*Experiment 6: Summary of results following subcutaneous injection of a horse-serum dispersion of dibenzanthracene or methylcholanthrene into strain C_3H mice*

Number of mice injected	Sex	Hydrocarbon injected	Amount injected, in mg.	Number of mice developing subcutaneous tumor	Average time, in weeks, for occurrence of subcutaneous tumors	Number of mice developing lung tumors	Number of mice killed on June 30, 1938
10	Female	Methylcholanthrene	1.0	10	11.5	0	0
9	Male	do	1.0	9	11.8	0	0
10	Female	do	.5	10	11.6	0	0
10	do	Dibenzanthracene	.5	9	32.2	4	1
11	do	do	1.0	9	28.4	6	2
10	Male	do	1.0	7	33.5	6	3

The experiment shows that 0.5 mg. and 1 mg. of dibenzanthracene as a dispersion in horse-serum induced pulmonary tumors in strain C_3H mice 32 weeks after subcutaneous injection.

Experiment 7.—To ascertain whether intravenously injected dibenzanthracene induces lung and liver tumors in C_3H mice, 28 male mice born between July 29, 1937, and August 13, 1937, served as experimental animals. On October 8, 1937, 15 received an intravenous injection of 1 cc. of a horse-serum dispersion containing 1 mg. of dibenzanthracene, while 13 litter mate controls received 1 cc. of a horse-serum dispersion which did not contain the hydrocarbon.

Two mice dying 2 and 4 months after injection of dibenzanthracene were free from tumor. The remaining 26 mice were kept until July 6, 1938, approximately 9 months after injection, when they were killed and autopsied. All of the 13 dibenzanthracene-injected mice had large pulmonary tumors varying in number from 2 to 15 in each pair of lungs and 5 also had liver growths ranging in size from 3 mm. to 5 mm. in diameter. Of the 13 litter mate controls one had a single pulmonary tumor and none had a liver growth.

The results of the experiment show that lung tumors were induced by intravenous injection of the carcinogen. The occurrence of hepatomas in 5 of the dibenzanthracene-injected animals may be regarded as evidence that the hydrocarbon exerted some influence toward accelerating their appearance.

Experiment 8.—Another effort was made to determine whether dibenzanthracene hastened the occurrence of spontaneous breast tumors in C_3H female mice. Forty-seven 4-month-old females were

mated to male litter mates on November 3, 1937. One week later each of 28 of the mice was injected intravenously with 0.5 cc. of a horse-serum dispersion of dibenzanthracene containing 0.5 mg. of the hydrocarbon; this was repeated 2 days later. The 19 remaining mice were kept as uninjected litter-mate controls. The injections were done one week after mating in hope that the possible pregnancy and its influence upon the mammary tissue might offer the carcinogen a better opportunity to act upon the breast. The primary purpose of the experiment was defeated because very few of the dibenzanthracene-injected mice bore litters, while all the normal controls had litters 3 to 6 weeks after mating. The animals were kept under observation for 6 months, however, to obtain information concerning the induction of pulmonary tumors.

Between the 19th and 28th weeks after injection 12 of the dibenzanthracene-injected mice developed spontaneous breast tumors and 11 had primary pulmonary tumors also, while none of 13 controls, which developed breast tumors in the same period of time, had pulmonary tumors. Six months after injection, all the mice which had not developed breast tumors were killed and examined for the presence of pulmonary growths. All the 16 dibenzanthracene-injected mice had several tumors in the lungs while of the 6 remaining control animals only one had a single pulmonary tumor.

The experiment is presented as further evidence that dibenzanthracene induces pulmonary tumors in strain C_3H mice. Since the first mouse came to autopsy 19 weeks after injection, it may be concluded that 1 mg. of dibenzanthracene when injected intravenously in a horse-serum dispersion induces pulmonary tumors in the majority of strain C_3H female mice within 4 to 5 months.

DISCUSSION

It is of importance to note that with the exception of experiments 1, 3, and 7, none of the investigations recorded herein was performed for the primary purpose of determining the susceptibility of C_3H mice to the induction of pulmonary or liver tumors. Furthermore, with the exception of experiment 1, none of the experiments represents an effort to ascertain the time of appearance of induced lung or liver tumors following injection of the carcinogens.

The results of the majority of experiments performed in this laboratory in which pulmonary tumors arose in C_3H mice following injection of dibenzanthracene are summarized in table 3.

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TABLE 3.—*Summary of 11 experiments in which pulmonary tumors occured in strain C_3H mice following injection of dibenzanthracene*

Experiment number	Number of mice injected	Sex	Dibenzanthracene injected, in mg.	Preparation used	Route of injection	Number of mice living when first lung tumor was noted	Time, in months, after injection when first lung tumor was noted	Age, in months, of mice in which lung tumors occurred										Total number of lung tumors
								7	8	9	10	11	12	13	14	15	16	
5 [1]	20	Male	0.8	Lard solution	Subcutaneous	4	8.2				3							3
7 [1]	30	Female	1.0	do	do	5	7.7				1							1
5 [1]	30	do	1.0	Horse-serum dispersion	do	18	5.6		2	4	1							7
8 [1]	20	Male	.6	Dog-serum dispersion	do	14	9.5							10				10
8 [1]	20	do	.6	Lard solution	do	3	9.5							1				1
1 [1]	20	do	1.0	Horse-serum dispersion	do	12	5.1	2	1	1	1							5
1	16	do	.9	Dog-serum dispersion	Intravenous	8	9.1						1	3				4
2	27	Female	1.0	Horse-serum dispersion	Subcutaneous	2	11.0									2		2
3	10	do	.6	Dog-serum dispersion	do	7	7.5				1	1	1			2	1	6
5	31	do	.5	Horse-serum dispersion	Intravenous	8	7.0				2	2						4
6	10	do	.5	do	Subcutaneous	9	7.6				1	1		2				4
6	11	do	1.0	do	do	7	7.6				1	1	1	3				6
6	10	Male	1.0	do	do	7	7.6						3	3				6
7	13	do	1.0	do	Intravenous	13	9.0					13						13
8	28	Female	1.0	do	do	28	4.4		3	6	18							27
Total	296					145		2	6	11	29	18	6	22	0	4	1	99

[1] Experiment published previously, reference 2.
[2] Experiment published previously, reference 4.

When the results presented in table 3 are compared with occurrence of spontaneous pulmonary tumors in strain C_3H mice, as shown in table 1, the influence of dibenzanthracene upon pulmonary tumors in this strain of mice is evident. Of 145 mice living when the first pulmonary tumors were noted in the different experiments 99, or 67.5 percent, had similar tumors at an average age of 10.8 months. This incidence is considerably higher than that reported (*8*) for normal 11-month-old mice of strain A, a strain which is known to possess a high degree of susceptibility to spontaneous pulmonary growths. It may be concluded, therefore, that subcutaneous or intravenous injection of dibenzanthracene induces pulmonary tumors in mice of strain C_3H.

Following the injection of 1 mg. of dibenzanthracene subcutaneously, induced lung tumors begin to appear in C_3H mice in from 5 to 6 months, which indicates that these animals are more resistant to this type of induced tumor than are mice of strain A in which lung tumors are induced 10 to 12 weeks after subcutaneous injection (*1*) of a smaller quantity of the carcinogen.

The higher incidence of induced lung tumors in experiments 7 and 8 indicates that the intravenous route of injection of dibenzanthracene is more effective than the subcutaneous route for the induction of pulmonary tumors; experiment 8 also shows that lung tumors appear earlier following intravenous injection. Hence it may be concluded that intravenous injection is more effective than subcutaneous injection for precise determinations of pulmonary tumor susceptibility.

The occurrence of liver growths in C_3H mice injected with dibenzanthracene or methylcholanthrene is summarized in table 4.

Six experiments are listed in table 4 in which liver tumors arose in male C_3H mice. It is seen that of 67 animals living when the first hepatomas were noted in the different experiments, 28, or 41.8 percent, had this type of growth at an average age of 11.6 months. This incidence is higher than found in normal male mice of 11 to 13 months of age (17.6 percent) as shown in table 1. Experiment 7 shows that 5 hepatomas were found in 13 dibenzanthracene-injected mice, while none was found in an equal number of litter mate controls. Of the 35 mice listed as 13 months of age in table 1, 7, or 20 percent, had hepatomas and 2, or 6.6 percent, had primary lung tumors. These animals served as controls for a previously published experiment (*2*) in which male C_3H mice were injected subcutaneously with a dog-serum dispersion of dibenzanthracene. Of 14 animals 6, or 42.8 percent, developed hepatomas, and 10, or 71.4 percent, developed primary pulmonary tumors. This suggests that hepatomas were induced in C_3H male animals.

TABLE 4.—*Summary of six experiments in which liver tumors occurred in strain C_3H male mice following injection of dibenzanthracene or methylcholanthrene*

Experiment number	Number of mice injected	Hydrocarbon injected	Amount injected, in mg.	Preparation used	Route of injection	Number of mice living when first liver tumor was noted	Time, in months after injection when first liver tumor was noted	Age, in months, of mice in which liver tumors occurred			Total number of liver tumors
								11	12	13	
5 [1]	20	Dibenzanthracene	0.8	Lard solution	Subcutaneous	4	8.2	3			3
8 [1]	20	do	.6	Dog-serum dispersion	do	14	9.5			6	6
8 [1]	20	do	.6	Lard solution	do	3	9.5			2	2
1	16	do	.9	Dog-serum dispersion	Intravenous	8	9.1		2		2
4	12	Methylcholanthrene	.25	Lard solution	Subcutaneous	5	9.7	2			2
4	12	do	.125	do	do	10	9.7	3			3
4	12	do	.0625	do	do	7	9.7	4			4
6	10	Dibenzanthracene	1.0	Horse-serum dispersion	do	3	9.2	1			1
7	13	do	1.0	do	Intravenous	13	9.0	5			5
Total	135					67		18	2	8	28

[1] Experiment published previously, reference 2.

Attention is directed to the fact that few hepatomas have occurred in female C_3H animals following injection of carcinogenic hydrocarbons although, as revealed in table 1, female mice do develop this type of growth spontaneously. It is also evident that in none of the experiments performed thus far have liver tumors been induced in practically all male mice of a single experiment nor have they been noted in the males coming to autopsy before 11 months of age, when they are found in normal males. Indeed, liver growths have not occurred until approximately 9 months after injection. Perhaps further modifications in the technique of administration or an increased amount of the carcinogens might induce more hepatomas or lead to their earlier appearance. There is also a possibility that the genetic basis of liver tumors in C_3H mice is such that only a certain number are capable of developing either spontaneous or induced hepatomas, but there is little evidence as yet to support this postulation.

It is believed that the results obtained up to the present time do not justify a definite conclusion as to whether or not the liver tumors found after injection of carcinogenic hydrocarbons have been induced. This conclusion may be regarded as similar to that of Strong, Smith, and Gardner (*12*) who found that, following the subcutaneous injection of 3:4:5:6-dibenzcarbazole, hepatomas occurred "slightly earlier" in life than in untreated mice of the CBA strain.

SUMMARY

Hepatomas occur spontaneously in strain C_3H mice. Eighty-five female mice one year of age or older exhibited an incidence of 11.7 percent at an average age of 16.9 months, while 80 males in the same age group had an incidence of 22.5 percent at an average age of 15.1 months.

Pulmonary tumors also occur spontaneously in strain C_3H mice but their incidence in mice over one year of age (7.2 percent in 165 animals) is lower than the incidence of hepatomas.

Primary pulmonary tumors can be induced in strain C_3H animals by the subcutaneous or intravenous injection of dibenzanthracene. Injection of the hydrocarbon hastens their appearance and increases their number.

Definite conclusions are not justified as to whether hepatomas are induced by dibenzanthracene or methylcholanthrene.

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DEATHS DURING WEEK ENDED JUNE 10, 1939

[From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended June 10, 1939	Corresponding week, 1938
Data from 88 large cities of the United States:		
Total deaths	7,581	[1] 7,859
Average for 3 prior years	[2] 7,897	
Total deaths, first 23 weeks of year	206,930	199,070
Deaths under 1 year of age	425	[1] 542
Average for 3 prior years	[2] 530	
Deaths under 1 year of age, first 23 weeks of year	12,123	12,340
Data from industrial insurance companies:		
Policies in force	67,253,770	69,285,076
Number of death claims	12,798	12,847
Death claims per 1,000 policies in force, annual rate	9.9	9.7
Death claims per 1,000 policies, first 23 weeks of year, annual rate	11.4	9.8

[1] Data , or 87 cities.
[2] Data for 86 cities.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers.

In these and the following tables, a zero (0) indicates a positive report and has the same significance as any other figure, while leaders (----) represent no report, with the implication that cases or deaths may have occurred but were not reported to the State health officer.

Cases of certain diseases reported by telegraph by State health officers for the week ended June 17, 1939, rates per 100,000 population (annual basis), and comparison with corresponding week of 1938 and 5-year median

Division and State	Diphtheria				Influenza				Measles			
	June 17, 1939, rate	June 17, 1939, cases	June 18, 1938, cases	1934–38, median	June 17, 1929, rate	June 17, 1939, cases	June 18, 1938, cases	1934–38, median	June 17, 1939, rate	June 17, 1939, cases	June 18, 1938, cases	1934–38, median
NEW ENG.												
Maine	18	3	0	1	6	1	----	----	380	63	81	81
New Hampshire	10	1	0	0	----	----	----	----	335	33	56	37
Vermont	0	0	1	0	----	----	----	----	2,694	201	47	30
Massachusetts	0	0	2	6	----	----	----	----	1,194	1,015	420	460
Rhode Island	0	0	0	2	----	----	----	----	198	26	4	22
Connecticut	0	0	6	3	----	----	5	----	1,389	468	36	210
MID. ATL.												
New York	6	14	13	34	[1]4	[1]6	[1]1	[1]3	605	1,511	3,186	2,546
New Jersey [2]	18	15	10	10	5	4	4	4	38	32	547	682
Pennsylvania [2]	7	14	20	20	----	----	----	----	63	124	2,267	1,586
E. NO. CEN.												
Ohio	8	10	11	16	22	28	----	17	74	96	918	918
Indiana [2]	6	4	1	5	1	1	2	4	9	6	97	129
Illinois	12	19	37	40	6	9	10	20	22	23	508	508
Michigan [3]	5	5	4	8	2	2	----	----	318	301	1,751	403
Wisconsin	0	0	0	2	54	31	10	11	803	457	2,092	1,651
W. NO. CEN.												
Minnesota	2	1	2	2	4	2	2	1	267	138	208	190
Iowa [2]	6	3	2	2	2	1	2	----	203	100	223	121
Missouri	6	5	5	13	----	----	2	22	4	3	50	60
North Dakota	7	1	0	0	73	10	----	----	37	5	59	34
South Dakota	0	0	0	1	23	3	----	----	428	57	----	3
Nebraska	4	1	1	1	15	4	----	----	420	110	95	59
Kansas	8	3	3	6	6	2	1	1	165	59	179	179

See footnotes at end of table.

Cases of certain diseases reported by telegraph by State health officers for the week ended June 17, 1939, rates per 100,000 population (annual basis), and comparison with corresponding week of 1938 and 5-year median—Continued

Division and State	Diphtheria				Influenza				Measles			
	June 17, 1939, rate	June 17, 1939, cases	June 18, 1938, cases	1934–38, median	June 17, 1939, rate	June 17, 1939, cases	June 18, 1938, cases	1934–38, median	June 17, 1939, rate	June 17, 1939, cases	June 18, 1938, cases	1934–38, median
SO. ATL.												
Delaware	0	0	1	1	----	----	----	----	236	12	5	9
Maryland [2 3]	6	2	3	5	6	2	1	1	370	120	79	123
Dist. of Col	0	0	12	7	----	----	----	----	1,164	144	28	30
Virginia [2 4]	19	10	7	6	60	32	----	----	836	446	298	183
West Virginia	5	2	3	8	24	9	8	12	38	14	159	115
North Carolina [2 4]	13	9	5	7	----	----	1	2	421	288	842	196
South Carolina [4]	8	3	3	3	514	188	50	56	38	14	50	49
Georgia [4]	12	7	1	3	28	17	----	----	100	60	65	----
Florida	18	6	6	6	12	4	----	----	142	47	31	11
E. SO. CEN.												
Kentucky	3	2	4	4	----	----	13	5	35	20	65	179
Tennessee	5	3	5	6	39	22	5	5	178	101	49	49
Alabama [4]	2	1	7	7	39	22	8	7	143	81	76	68
Mississippi [3]	8	3	6	6	----	----	----	----	0	0	----	----
W. SO. CEN.												
Arkansas	2	1	8	3	32	13	8	8	77	31	86	11
Louisiana	12	5	10	11	22	9	10	15	34	14	10	15
Oklahoma	4	2	2	2	34	17	38	21	157	78	69	48
Texas [4]	25	30	26	26	75	91	138	78	256	309	90	125
MOUNTAIN												
Montana [3]	0	0	0	0	19	2	----	1	786	84	56	37
Idaho [3]	0	0	0	0	----	----	7	----	224	22	18	18
Wyoming [3]	0	0	2	0	----	----	----	----	742	34	8	5
Colorado [2 3 4]	29	6	19	4	96	20	----	----	270	56	107	107
New Mexico	25	2	2	2	12	1	1	1	210	17	64	56
Arizona	12	1	2	2	405	33	14	8	98	8	6	10
Utah [3]	0	0	3	0	----	----	----	----	914	92	263	19
PACIFIC												
Washington [3]	6	2	0	0	----	----	----	----	2,371	769	30	199
Oregon [3]	0	0	0	2	94	19	22	7	278	56	49	49
California	17	21	34	31	30	36	290	110	1,193	1,455	1,017	1,017
Total	9	217	289	330	30	641	653	516	372	9,210	16,444	16,444
24 weeks	16	9,773	11,648	12,453	292	148,631	43,019	101,610	542	322,064	718,565	621,909

Division and State	Meningitis, meningococcus				Poliomyelitis				Scarlet fever			
	June 17, 1939, rate	June 17, 1939, cases	June 18, 1938, cases	1934–38, median	June 17, 1939, rate	June 17, 1939, cases	June 18, 1938, cases	1934–38, median	June 17, 1939 rate	June 17, 1939, cases	June 18, 1938, cases	1934–38, median
NEW ENG.												
Maine	0	0	0	0	0	0	0	0	66	11	6	7
New Hampshire	0	0	0	0	0	0	0	0	10	1	9	3
Vermont	0	0	0	0	0	0	0	0	94	7	5	5
Massachusetts	1.2	1	0	2	1.2	1	0	1	128	109	239	188
Rhode Island	0	0	1	1	0	0	0	0	23	3	11	11
Connecticut	3	1	1	1	0	0	1	0	77	26	77	77
MID. ATL.												
New York	1.6	4	16	13	0.8	2	6	2	107	267	407	496
New Jersey [3]	1.2	1	3	3	0	0	0	1	120	101	100	114
Pennsylvania [3]	4	7	8	4	0.5	1	0	0	76	150	403	338

See footnotes at end of table.

Cases of certain diseases reported by telegraph by State health officers for the week ended June 17, 1939, rates per 100,000 population (annual basis), and comparison with corresponding week of 1938 and 5-year median—Continued

Division and State	Meningitis, meningococcus				Poliomyelitis				Scarlet fever			
	June 17, 1939, rate	June 17, 1939, cases	June 18, 1938, cases	1934–38, median	June 17, 1939, rate	June 17, 1939, cases	June 18, 1938, cases	1934–38, median	June 17, 1939 rate	June 17, 1939, cases	June 17, 1938, cases	1934–38, median
E. NO. CEN.												
Ohio	0.8	1	0	4	0	0	1	1	132	172	155	270
Indiana [2]	0	0	1	1	1.5	1	0	0	76	51	53	53
Illinois	0	0	0	6	0.7	1	3	1	113	173	255	351
Michigan [2]	1.1	1	2	2	1.1	1	0	0	272	257	236	287
Wisconsin	0	0	1	1	0	0	0	1	88	50	90	223
W. NO. CEN.												
Minnesota	0	0	0	1	0	0	0	0	56	29	43	89
Iowa [2]	0	0	1	3	0	0	0	0	81	40	49	59
Missouri	0	0	0	2	0	0	1	1	49	38	26	28
North Dakota	0	0	0	0	0	0	0	0	0	0	10	11
South Dakota	0	0	0	0	0	0	0	0	53	7	8	8
Nebraska	4	1	0	0	0	0	0	0	23	6	6	9
Kansas	0	0	0	0	0	0	0	0	70	25	30	45
SO. ATL.												
Delaware	20	1	0	0	0	0	0	0	138	7	3	3
Maryland [2 3]	0	0	1	1	0	0	0	0	22	7	43	43
Dist. of Col.	0	0	3	3	0	0	0	0	32	4	6	7
Virginia [2 4]	1.9	1	0	4	0	0	0	2	30	16	18	20
West Virginia	2.7	1	1	1	0	0	0	0	59	22	20	28
North Carolina [2 4]	1.5	1	4	4	2.9	2	0	2	26	18	30	18
South Carolina [4]	5	2	2	0	76	28	0	0	0	0	0	1
Georgia [4]	0	0	0	0	8	5	1	0	13	8	2	4
Florida	0	0	0	0	3	1	0	0	15	5	7	4
E. SO. CEN.												
Kentucky	0	0	1	1	0	0	1	0	21	12	17	14
Tennessee	5	3	3	2	0	0	1	1	37	21	10	8
Alabama [4]	1.8	1	1	1	0	0	3	2	19	11	5	5
Mississippi [3]	0	0	0	0	0	0	3	2	5	2	5	6
W. SO. CEN.												
Arkansas	2.5	1	1	0	0	0	1	0	7	3	4	4
Louisiana	0	0	3	3	0	0	1	1	22	9	6	5
Oklahoma	0	0	1	1	0	0	3	0	10	5	11	11
Texas [4]	0.8	1	1	1	1.7	2	0	1	19	23	33	33
MOUNTAIN												
Montana [3]	0	0	1	0	0	0	0	0	84	9	8	8
Idaho [3]	0	0	0	0	0	0	0	0	10	1	7	7
Wyoming [3]	0	0	0	0	0	0	0	0	0	0	3	6
Colorado [2 3 6]	0	0	0	0	5	1	0	0	96	20	29	29
New Mexico	0	0	0	0	12	1	0	0	185	15	14	14
Arizona	0	0	0	0	49	4	0	0	12	1	1	7
Utah [3]	0	0	0	0	0	0	0	0	119	12	15	15
PACIFIC												
Washington [3]	0	0	0	1	0	0	0	0	62	20	22	36
Oregon [3]	0	0	3	0	5	1	0	0	89	18	12	16
California	1.6	2	4	3	11	13	1	6	80	98	149	149
Total	1.2	31	64	64	2.6	65	27	69	75	1,890	2,698	3,134
24 weeks	1.8	1,108	1,813	3,403	1	630	477	575	179	107,943	126,575	152,197

See footnotes at end of table. .

Cases of certain diseases reported by telegraph by State health officers for the week ended June 17, 1939, rates per 100,000 population (annual basis), and comparison with corresponding week of 1938 and 5-year median—Continued

Division and State	Smallpox				Typhoid and paratyphoid fever				Whooping cough		
	June 17, 1939, rate	June 17, 1939, cases	June 18, 1938, cases	1934–38, median	June 17, 1939, rate	June 17, 1939, cases	June 18, 1938, cases	1934–38, median	June 17, 1939, rate	June 17, 1939, cases	June 18, 1938, cases
NEW ENG.											
Maine	0	0	0	0	0	0	4	1	266	44	41
New Hampshire	0	0	0	0	10	1	0	0	0	0	0
Vermont	0	0	0	0	0	0	0	0	617	46	45
Massachusetts	0	0	0	0	7	6	0	1	142	121	89
Rhode Island	0	0	0	0	15	2	0	0	99	13	19
Connecticut	0	0	0	0	9	3	0	1	202	68	84
MID. ATL.											
New York	3	8	0	0	4	10	9	9	171	427	541
New Jersey [2]	0	0	0	0	0	0	4	4	335	281	182
Pennsylvania [2]	1	1	0	0	3	6	21	12	154	303	225
E. NO. CEN.											
Ohio	11	14	2	2	6	8	5	8	246	320	196
Indiana [2]	6	4	12	4	12	8	3	3	62	42	10
Illinois	6	9	13	12	9	13	6	6	117	179	232
Michigan [2]	3	3	1	0	3	3	4	5	178	168	280
Wisconsin	0	0	1	5	2	1	3	1	251	143	170
W. NO. CEN.											
Minnesota	4	2	12	7	0	0	1	1	54	28	40
Iowa [2]	24	12	43	19	6	3	0	3	57	28	24
Missouri	10	8	23	10	5	4	7	7	23	18	24
North Dakota	22	3	8	8	0	0	0	0	7	1	37
South Dakota	53	7	10	7	0	0	0	0	15	2	14
Nebraska	23	6	1	4	0	0	0	0	130	34	17
Kansas	20	7	13	8	6	2	2	7	39	14	130
SO. ATL.											
Delaware	0	0	0	0	0	0	0	0	335	17	9
Maryland [2 3]	0	0	0	0	6	2	4	4	142	46	57
Dist. of Col.	0	0	0	0	24	3	0	0	243	30	9
Virginia [3 4]	0	0	0	0	24	13	14	12	231	123	115
West Virginia	0	0	0	0	24	9	3	6	43	16	118
North Carolina [3 4]	6	[7] 4	1	0	16	11	27	4	207	203	398
South Carolina [4]	0	0	0	0	57	21	1	12	199	73	79
Georgia [4]	0	0	0	0	20	12	37	23	30	18	53
Florida	0	0	0	0	6	2	11	4	84	28	26
E. SO. CEN.											
Kentucky	3	2	9	0	21	12	23	9	21	12	66
Tennessee	25	14	0	0	18	10	20	13	88	50	75
Alabama [4]	0	0	7	0	9	5	10	10	109	62	77
Mississippi [3]	0	0	10	0	3	1	8	8	----	----	----
W. SO. CEN.											
Arkansas	5	2	1	0	17	7	15	8	82	33	25
Louisiana	0	0	0	1	27	11	10	16	7	3	54
Oklahoma	24	12	14	1	30	15	11	10	8	4	52
Texas [4]	0	0	11	9	13	16	34	30	121	146	347
MOUNTAIN											
Montana [3]	0	0	0	7	0	0	2	1	56	6	57
Idaho [3]	0	0	5	2	0	0	4	1	51	5	7
Wyoming [3]	87	4	0	3	0	0	1	0	0	0	10
Colorado [3 4 6]	10	2	3	2	19	4	3	1	236	49	29
New Mexico	0	0	7	0	111	9	1	1	210	17	27
Arizona	0	0	4	0	12	1	11	2	417	34	23
Utah [3]	0	0	1	1	0	0	0	0	546	55	113

Cases of certain diseases reported by telegraph by State health officers for the week ended June 17, 1939, rates per 100,000 population (annual basis), and comparison with corresponding week of 1938 and 5-year median—Continued

Division and State	Smallpox				Typhoid and paratyphoid fever				Whooping cough		
	June 17, 1939, rate	June 17, 1939, cases	June 18, 1938, cases	1934–38, median	June 17, 1939, rate	June 17, 1939, cases	June 18, 1938, cases	1934–38, median	June 17, 1939, rate	June 17, 1939, cases	June 18, 1938, cases
PACIFIC											
Washington [1]	3	1	21	3	160	52	4	2	86	28	90
Oregon [2]	5	1	5	5	5	1	2	2	80	16	16
California	57	70	38	10	4	5	16	10	148	181	349
Total	8	196	276	180	12	292	341	321	143	3,535	4,681
24 weeks	13	[7] 8,072	11,525	5,254	5	3,233	3,563	3,563	159	94,166	103,484

[1] New York City only.
[2] Rocky Mountain spotted fever, week ended June 17, 1939, 35 cases as follows: New Jersey, 1; Pennsylvania, 2; Indiana, 2; Iowa, 3; Maryland, 5; Virginia, 4; North Carolina, 3; Montana, 1; Idaho, 1; Wyoming, 8; Colorado, 2; Washington, 1; Oregon, 2.
[3] Period ended earlier than Saturday.
[4] Typhus fever, week ended June 17, 1939, 41 cases as follows: Virginia, 1; North Carolina, 1; South Carolina, 3; Georgia, 23; Alabama, 3; Texas, 10.
[5] Colorado tick fever, Colorado, 3 cases.
[6] Tick paralysis, Colorado, 1 case.
[7] One case reported as smallpox in North Carolina, for the week ended May 13, 1939, published in the Public Health Reports for May 26, p. 898, was later found not to be smallpox.

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week.

State	Meningitis, meningococcus	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid and paratyphoid fever
February 1939										
Massachusetts	7	12	----	----	3,825	1	0	890	0	7
March 1939										
Massachusetts	5	14	----	----	4,290	----	0	901	0	5
May 1939										
District of Col	1	18	2	----	1,488	1	0	54	0	2
Idaho	----	2	5	----	344	----	0	16	3	0
Iowa	1	10	13	----	851	----	0	376	167	20
Kentucky	8	37	53	4	202	6	1	175	8	27
Maryland	2	13	17	----	1,015	2	0	124	0	6
Michigan	3	64	21	3	2,518	----	1	1,911	55	13
Minnesota	0	11	20	----	1,398	----	0	347	45	2
Mississippi	5	30	2,751	3,107	2,294	527	1	5	3	5
Nebraska	0	6	16	----	1,210	----	0	96	19	1
New Jersey	3	38	22	2	187	----	1	904	0	9
North Dakota	0	5	59	----	218	----	0	29	4	3
Tennessee	0	9	221	79	247	18	1	181	48	11

Summary of monthly reports from States—Continued

February 1939

	Cases
Massachusetts:	
Chickenpox	1,347
Dysentery (bacillary)	23
Encephalitis, epidemic or lethargic	2
German measles	66
Mumps	823
Ophthalmia neonatorum	36
Rabies in animals	1
Septic sore throat	21
Trichinosis	2
Undulant fever	2
Whooping cough	1,015

March 1939

Massachusetts:	
Anthrax	1
Chickenpox	1,181
Dysentery (bacillary)	24
Encephalitis, epidemic or lethargic	4
German measles	105
Mumps	1,015
Ophthalmia neonatorum	88
Rabies in animals	2
Septic sore throat	28
Trichinosis	1
Undulant fever	3
Whooping cough	971

May 1939

Actinomycosis:	
Michigan	1
Anthrax:	
Michigan	1
New Jersey	1
Chickenpox:	
District of Columbia	126
Idaho	30
Iowa	322
Kentucky	233
Maryland	277
Michigan	1,236
Minnesota	468
Mississippi	519
Nebraska	73
New Jersey	1,029
North Dakota	99
Tennessee	108
Dengue:	
Mississippi	1
Dysentery:	
District of Columbia (amoebic)	1
Iowa (bacillary)	1
Kentucky (amoebic)	2
Kentucky (bacillary)	7
Maryland (amoebic)	1

May 1939—Cont.

	Cases
Dysentery—Continued	
Maryland (bacillary)	2
Maryland (unspecified)	3
Michigan (amoebic)	3
Michigan (bacillary)	1
Minnesota (amoebic)	3
Mississippi (amoebic)	179
Mississippi (bacillary)	1,597
New Jersey (amoebic)	1
Tennessee (amoebic)	3
Tennessee (bacillary)	10
Encephalitis, epidemic or lethargic:	
Iowa	2
Kentucky	1
Maryland	2
Minnesota	2
North Dakota	2
Tennessee	1
German measles:	
Idaho	59
Maryland	22
Michigan	78
New Jersey	46
North Dakota	14
Tennessee	2
Hookworm disease:	
Mississippi	506
Tennessee	1
Impetigo contagiosa:	
Maryland	14
Tennessee	3
Jaundice, infectious:	
Michigan	4
North Dakota	1
Mumps:	
Idaho	33
Iowa	185
Kentucky	163
Maryland	292
Michigan	203
Mississippi	386
Nebraska	34
New Jersey	656
North Dakota	3
Tennessee	51
Ophthalmia neonatorum:	
Minnesota	1
Mississippi	7
New Jersey	17
Tennessee	6
Puerperal septicemia:	
Mississippi	24
Rabies in animals:	
Iowa	3
Michigan	1
Minnesota	2
Mississippi	12
New Jersey	58
Rabies in man:	
Tennessee	1

May 1939—Cont.

	Cases
Rocky Mountain spotted fever:	
District of Columbia	3
Idaho	5
Iowa	5
Maryland	13
New Jersey	2
Septic sore throat:	
Iowa	8
Kentucky	59
Maryland	24
Michigan	66
Minnesota	17
Nebraska	3
New Jersey	27
Tennessee	12
Tetanus:	
Maryland	2
New Jersey	4
North Dakota	1
Tennessee	1
Trachoma:	
Minnesota	3
Mississippi	10
North Dakota	1
Tennessee	1
Tularaemia:	
Kentucky	2
Michigan	1
Minnesota	1
Tennessee	4
Typhus fever:	
Maryland	1
Mississippi	2
Tennessee	3
Undulant fever:	
Idaho	1
Iowa	22
Maryland	4
Michigan	22
Minnesota	5
New Jersey	3
Tennessee	1
Vincent's infection:	
Maryland	11
Michigan	16
North Dakota	9
Tennessee	12
Whooping cough:	
District of Columbia	117
Idaho	14
Iowa	90
Kentucky	56
Maryland	127
Michigan	855
Minnesota	152
Mississippi	1,151
Nebraska	78
New Jersey	1,320
North Dakota	16
Tennessee	140

CASES OF VENEREAL DISEASES REPORTED FOR APRIL 1939

These reports are published monthly for the information of health officers in order to furnish current data as to the prevalence of the venereal diseases. The figures are taken from reports received from State and city health officers. They are preliminary and are therefore subject to correction. It is hoped that the publication of these reports will stimulate more complete reporting of these diseases.

Reports from States

	Syphilis		Gonorrhea	
	Cases reported during month	Monthly case rates per 10,000 population	Cases reported during month	Monthly case rates per 10,000 population
Alabama	2,353	8.13	342	1.18
Arizona	190	4.61	104	2.52
Arkansas	907	4.43	218	1.06
California	1,841	2.99	1,188	1.93
Colorado	119	1.11	77	.72
Connecticut	168	.96	85	.49
Delaware	213	8.16	25	.96
District of Columbia	468	7.46	279	4.45
Florida	1,236	7.40	112	.67
Georgia	2,053	6.65	331	1.07
Idaho	35	.71	21	.43
Illinois	2,351	2.98	1,082	1.37
Indiana	610	1.76	72	.21
Iowa	238	.93	92	.36
Kansas	317	1.70	96	.52
Kentucky	916	3.14	294	1.01
Louisiana	937	4.39	78	.37
Maine	25	.29	35	.41
Maryland	1,495	8.90	297	1.77
Massachusetts	493	1.11	355	.80
Michigan	1,148	2.38	451	.93
Minnesota	235	.89	135	.51
Mississippi	2,576	12.73	2,621	12.96
Missouri	577	1.45	138	.35
Montana	94	1.74	34	.63
Nebraska	57	.42	53	.39
Nevada	14	1.39	14	1.39
New Hampshire	17	.33	6	.12
New Jersey	846	1.95	236	.54
New Mexico	134	3.18	54	1.28
New York	4,940	3.81	1,834	1.48
North Carolina	2,242	6.42	309	.82
North Dakota	27	.38	35	.50
Ohio	1,356	2.01	506	.75
Oklahoma	448	1.76	21	.08
Oregon	82	.80	80	.78
Pennsylvania	1,195	1.17	95	.09
Rhode Island	111	1.63	55	.81
South Carolina	1,439	7.67	241	1.29
South Dakota	20	.29	22	.32
Tennessee	1,174	4.06	517	1.79
Texas	5,220	8.46	849	1.38
Utah	19	.37	20	.39
Vermont	16	.42	13	.34
Virginia	1,766	6.53	302	1.12
Washington	214	1.20	215	1.30
West Virginia	417	2.24	185	.99
Wisconsin	37	.13	100	.34
Wyoming			5	.13
Total	43,386	3.36	14,327	1.11

Reports from cities of 200,000 population or over

	Syphilis		Gonorrhea	
	Cases reported during month	Monthly case rates per 10,000 population	Cases reported during month	Monthly case rates per 10,000 population
Akron, Ohio [1]				
Atlanta, Ga	327	10.89	46	1.53
Baltimore, Md	664	7.95	134	1.60
Birmingham, Ala	302	10.26	42	1.43
Boston, Mass	162	2.04	160	2.01
Buffalo, N. Y	123	2.04	49	.81
Chicago, Ill	1,524	4.16	744	2.03
Cincinnati, Ohio	213	4.51	92	1.95
Cleveland, Ohio	200	2.12	61	.65
Columbus, Ohio	12	.38	13	.41
Dallas, Tex	225	7.40	87	2.86
Dayton, Ohio	53	2.39	23	1.04
Denver, Colo	70	2.32	47	1.56
Detroit, Mich	572	3.15	231	1.27
Houston, Tex	286	7.98	95	2.65
Indianapolis, Ind	28	.73	6	.16
Jersey City, N. J	26	.80	7	.22
Kansas City, Mo [2]				
Los Angeles, Calif. [1]				
Louisville, Ky	245	7.23	63	1.86
Memphis, Tenn	237	8.12	143	4.90
Milwaukee, Wis. [1]				
Minneapolis, Minn	57	1.14	32	.64
Newark, N. J	300	6.60	108	2.38
New Orleans, La. [2]				
New York, N. Y	3,680	4.91	1,422	1.90
Oakland, Calif	55	1.76	24	.77
Omaha, Nebr	24	1.07	21	.94
Philadelphia, Pa	400	1.99		
Pittsburgh, Pa	268	3.80	17	.24
Portland, Oreg	35	1.09	43	1.34
Providence, R. I. [2]				
Rochester, N. Y	48	1.40	30	.88
St Louis, Mo. [2]				
St. Paul, Minn	46	1.60	16	.56
San Antonio, Tex	137	5.24	51	1.95
San Francisco, Calif	202	2.93	194	2.82
Seattle, Wash	133	3.44	103	2.66
Syracuse, N. Y	77	3.42	14	.62
Toledo, Ohio [1]				
Washington, D. C	468	7.46	279	4.45

[1] Not reporting.
[2] No report for current month.

WEEKLY REPORTS FROM CITIES

City reports for week ended June 10, 1939

This table summarizes the reports received weekly from a selected list of 140 cities for the purpose of showing a cross section of the current urban incidence of the communicable diseases listed in the table.

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Data for 90 cities:											
5-year average	147	55	24	4,845	465	1,573	14	392	37	1,293	----
Current week [1]	87	37	17	3,176	279	824	14	324	33	1,093	----
Maine:											
Portland	0	----	1	4	2	2	0	0	2	2	26
New Hampshire:											
Concord	0	----	0	0	0	0	0	0	1	0	14
Manchester	0	----	0	0	0	0	0	0	0	0	6
Nashua	0	----	0	0	0	0	0	0	0	0	5
Vermont:											
Barre	----	----	----	----	----	----	----	----	----	----	----
Burlington	0	----	0	8	0	1	0	0	0	2	8
Rutland	0	----	0	0	0	0	0	0	0	0	2
Massachusetts:											
Boston	1	----	0	166	8	35	0	7	0	18	187
Fall River	0	----	0	2	0	2	0	0	0	0	23
Springfield	0	1	1	0	0	0	0	1	0	0	32
Worcester	0	----	0	28	1	6	0	0	0	29	41
Rhode Island:											
Pawtucket	0	----	0	21	0	0	0	1	0	2	----
Providence	0	----	1	75	5	1	0	0	0	46	40
Connecticut:											
Bridgeport	0	1	0	14	0	2	0	2	0	0	17
Hartford	0	----	0	9	3	3	0	2	0	12	33
New Haven	0	----	0	258	4	4	0	0	0	7	43
New York:											
Buffalo	0	----	0	99	4	17	0	4	0	14	124
New York	22	7	3	189	49	95	0	72	6	102	1,297
Rochester	0	----	0	130	0	13	0	2	0	4	72
Syracuse	0	----	0	107	3	7	0	0	0	13	49
New Jersey:											
Camden	3	2	1	0	0	4	0	1	0	0	28
Newark	0	1	0	3	4	28	0	6	0	61	83
Trenton	0	----	0	0	1	1	0	2	0	0	34
Pennsylvania:											
Philadelphia	3	5	3	69	13	33	0	26	1	86	447
Pittsburgh	0	----	1	4	4	16	0	6	0	43	131
Reading	0	----	0	4	0	0	0	0	0	0	20
Scranton	0	----	----	1	----	3	0	----	0	0	----
Ohio:											
Cincinnati	0	1	0	0	3	13	0	8	0	8	116
Cleveland	3	4	0	3	7	41	0	9	1	78	165
Columbus	4	----	0	6	2	5	0	3	0	10	58
Toledo	0	1	0	18	2	9	1	3	0	34	73
Indiana:											
Anderson	0	----	0	0	1	0	1	1	0	4	4
Fort Wayne	0	----	1	0	1	3	0	0	0	0	26
Indianapolis	0	----	0	2	7	18	2	2	0	44	85
Muncie	0	----	0	0	1	0	0	0	0	0	9
South Bend	0	----	0	0	3	2	0	0	0	18	16
Terre Haute	0	----	0	0	0	2	0	0	0	0	20
Illinois:											
Alton	0	----	0	0	0	0	0	0	0	0	5
Chicago	13	1	0	14	26	129	0	37	2	106	638
Elgin	0	----	0	1	0	2	0	0	0	3	9
Moline	0	----	0	0	0	0	0	0	0	0	11
Springfield	0	----	0	1	1	2	0	0	1	1	21
Michigan:											
Detroit	1	----	0	45	5	113	0	12	2	61	241
Flint	0	----	0	27	0	15	0	0	0	3	18
Grand Rapids	0	----	0	0	0	21	0	0	0	0	33
Wisconsin:											
Kenosha	0	----	0	0	0	1	0	0	0	6	7
Madison	0	----	0	88	0	2	0	0	0	9	18
Milwaukee	0	----	0	3	3	27	0	2	0	26	92
Racine	0	----	0	2	0	2	0	0	0	9	11
Superior	0	----	0	29	1	0	0	0	0	0	10

[1] Figures for Barre, Boise, and Los Angeles estimated; reports not received.

City reports for week ended June 10, 1939—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Minnesota:											
Duluth	0		0	2	0	3	0	0	0	1	24
Minneapolis	0		1	41	3	13	1	0	0	14	87
St. Paul	0		0	20	5	2	0	0	0	19	42
Iowa:											
Cedar Rapids	0			5		0	0		0	3	
Davenport	0			1		2	1		0	0	
Des Moines	0		0	2	0	8	7	0	0	0	40
Sioux City	0			5		2	0		0	5	
Waterloo	0			0		3	0		0	3	
Missouri:											
Kansas City	1		0	1	3	5	4	5	1	2	9
St. Joseph	0		0	0	1	0	0	0	1	0	19
St. Louis	2		0	0	8	16	0	6	0	7	189
North Dakota:											
Fargo	0		0	1	1	0	0	0	0	0	6
Grand Forks	0			0		0	0		0	0	
Minot	0		0	0	0	0	0	0	0	0	5
South Dakota:											
Aberdeen	0			32		0	5		0	0	
Nebraska:											
Lincoln	0			22		1	0		0	16	
Omaha	0		0	6	1	1	1	3	1	1	46
Kansas:											
Lawrence	0		0	0	0	0	0	0	0	0	5
Topeka	0		0	2	4	1	5	0	0	0	14
Wichita	0		0	14	3	5	0	0	0	7	31
Delaware:											
Wilmington	0		0	0	4	1	0	0	0	3	20
Maryland:											
Baltimore	1	1	2	68	12	13	0	7	1	24	188
Cumberland	0		0	0	0	0	0	0	0	0	6
Frederick	0		0	1	0	0	0	0	0	0	1
Dist. of Col.:											
Washington	0		0	181	5	6	0	9	0	23	150
Virginia:											
Lynchburg	0		0	23	0	0	0	2	0	13	15
Norfolk	0		0	29	0	1	0	2	0	0	15
Richmond	0		0	170	1	0	0	2	0	1	44
Roanoke	0		0	8	0	0	0	0	0	4	13
West Virginia:											
Charleston	0		0	0	2	0	0	1	0	1	25
Huntington	0			0		0	0		0	0	
Wheeling	0		0	3	1	4	0	0	0	9	29
North Carolina:											
Gastonia	0			0		0	0		0	0	
Raleigh	0		0	0	0	0	0	2	0	5	11
Wilmington	0		0	1	0	0	0	0	0	0	6
Winston-Salem	0		0	1	1	0	0	1	0	1	21
South Carolina:											
Charleston	0		0	0	0	1	0	0	0	1	22
Greenville	0		0	0	1	0	0	0	0	1	6
Georgia:											
Atlanta	1	2	0	0	5	3	0	3	0	0	77
Brunswick	0		0	4	0	0	0	0	0	0	3
Savannah	0		0	0	0	0	0	2	2	5	27
Florida:											
Miami	0		0	1	0	0	0	1	0	6	25
Tampa	1		0	29	1	0	0	2	0	0	20
Kentucky:											
Ashland	0		0	0	3	0	0	0	0	0	6
Covington	0		0	0	0	3	0	3	1	0	13
Lexington	0		0	0	2	0	0	1	0	0	20
Louisville	0		0	3	4	3	0	2	0	10	58
Tennessee:											
Knoxville	0		0	0	1	5	0	1	0	0	31
Memphis	0		0	1	4	2	0	4	0	14	69
Nashville	0		0	1	1	2	0	1	0	8	39
Alabama:											
Birmingham	0		0	0	1	0	0	4	1	0	48
Mobile	1		0	1	2	0	0	0	1	0	19
Montgomery	0			0		1	0		2	8	

City reports for week ended June 10, 1939—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Arkansas:											
Fort Smith	0	------	------	1	------	0	0	------	0	0	------
Little Rock	0	------	0	0	3	0	0	1	0	0	4
Louisiana:											
Lake Charles	0	------	0	1	2	0	0	0	0	1	5
New Orleans	5	------	0	34	6	5	0	10	4	0	137
Shreveport	0	------	0	1	3	0	0	5	0	0	44
Oklahoma:											
Oklahoma City	0	------	0	0	5	2	0	1	0	0	43
Tulsa	0	------	0	19	------	1	0	------	0	0	------
Texas:											
Dallas	2	1	1	5	2	1	0	3	1	2	69
Fort Worth	0	1	0	11	0	0	0	0	0	0	30
Galveston	0	------	0	1	0	0	0	0	0	0	10
Houston	4	------	0	22	7	1	0	6	2	4	75
San Antonio	0	------	0	0	1	1	0	4	0	1	71
Montana:											
Billings	0	------	0	1	0	0	0	0	0	0	8
Great Falls	0	------	0	86	3	0	0	1	0	0	10
Helena	0	------	0	1	0	0	0	0	0	0	5
Missoula	0	------	0	1	0	0	0	1	0	0	5
Idaho:											
Boise	------	------	------	------	------	------	------	------	------	------	------
Colorado:											
Colorado Springs	0	------	0	4	0	9	0	0	0	7	9
Denver	4	------	0	32	3	11	0	4	0	16	79
Pueblo	0	------	0	45	0	0	0	0	0	21	6
New Mexico:											
Albuquerque	0	------	0	0	1	3	0	0	0	0	10
Utah:											
Salt Lake City	1	------	0	8	1	4	0	1	2	31	82
Washington:											
Seattle	0	------	1	481	2	5	0	3	0	8	73
Spokane	0	------	0	65	0	4	0	0	0	0	39
Tacoma	0	------	0	13	0	5	0	0	0	0	23
Oregon:											
Portland	1	------	0	4	3	5	0	5	0	2	73
Salem	0	1	------	2	------	0	0	------	0	2	------
California:											
Los Angeles	------	------	------	------	------	------	------	------	------	------	------
Sacramento	1	------	0	94	0	6	1	2	0	1	24
San Francisco	3	------	0	17	2	3	0	8	0	9	156

State and city	Meningitis, meningococcus		Poliomyelitis cases	State and city	Meningitis, meningococcus		Poliomyelitis cases
	Cases	Deaths			Cases	Deaths	
New York:				South Carolina:			
Buffalo	1	0	0	Charleston	0	0	[1]7
New York	0	0	2	Georgia:			
Minnesota:				Atlanta	0	0	1
St. Paul	0	0	1	Tennessee:			
District of Columbia:				Nashville	1	0	0
Washington	1	0	0				

Encephalitis, epidemic or lethargic.—Cases: Pittsburgh, 1.
Pellagra.—Cases: Baltimore, 1; Savannah, 1; San Francisco, 1.
Typhus fever.—Cases: New York, 1; Atlanta, 2; Savannah, 2; Tampa, 1; Mobile, 2.

[1] Includes 5 imported cases.

FOREIGN AND INSULAR

CANADA

Provinces—Communicable diseases—Week ended May 27, 1939.—During the week ended May 27, 1939, cases of certain communicable diseases were reported by the Department of Pensions and National Health of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Cerebrospinal meningitis				2						2
Chickenpox		16		145	112	16	15	4	55	363
Diphtheria		1	1	51	3	6	1			63
Dysentery					1					1
Influenza		18			6		3		33	60
Measles		7	11	745	904	16	1	5	11	1,700
Mumps				36	41	24		1	11	113
Pneumonia		17			24			1	5	47
Poliomyelitis		1								1
Scarlet fever		2	25	69	111	5	2	15	10	239
Trachoma							5			5
Tuberculosis	6	12	4	67	61		34		115	299
Typhoid and paratyphoid fever				6	3	8				17
Whooping cough		5		85	133	13	14	5	26	281

DENMARK

Notifiable diseases—January–March 1939.—During the months of January, February, and March 1939, cases of certain notifiable diseases were reported in Denmark as follows:

Disease	January	February	March	Disease	January	February	March
Anthrax			1	Measles	1,865	1,398	1,458
Cerebrospinal meningitis	2	4	8	Mumps	279	285	282
Chickenpox	1,076	1,147	1,172	Paratyphoid fever	3	8	3
Diphtheria	87	89	107	Poliomyelitis	9	5	4
Dysentery	16	58	21	Puerperal fever	25	17	15
Epidemic encephalitis	2	1	1	Scarlet fever	1,106	535	585
Erysipelas	271	219	223	Syphilis	48	45	45
Gastroenteritis, infectious	1,885	2,370	2,286	Tetanus, neonatorum	3	1	3
German measles	217	236	235	Typhoid fever	4		
Gonorrhea	660	650	666	Undulant fever	45	40	46
Influenza	16,388	38,799	29,244	Weil's disease	2	3	
Lymphogranuloma	1		1	Whooping cough	3,213	3,181	3,706
Malaria	2	2					

YUGOSLAVIA

Communicable diseases—4 weeks ended May 21, 1939.—During the 4 weeks ended May 21, 1939, certain communicable diseases were reported in Yugoslavia as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax	19	1	Paratyphoid fever	4	1
Cerebrospinal meningitis	92	21	Scarlet fever	208	4
Diphtheria and croup	461	29	Sepsis	9	5
Dysentery	17		Tetanus	56	19
Erysipelas	179	2	Typhoid fever	137	10
Favus	7		Typhus fever	88	5
Lethargic encephalitis		1			

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

From medical officers of the Public Health Service, American consuls, International Office of Public Health, Pan American Sanitary Bureau, health section of the League of Nations, and other sources. The reports contained in the following table must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

CHOLERA

[C indicates cases; D, deaths; P, present]

Place		Oct. 30–Nov. 26, 1938	Nov. 27–Dec. 31, 1938	Jan. 1–28, 1939	Jan. 29–Feb. 25, 1939	Week ended— March 1939 4	11	18	25	April 1939 1	8	15	22	29	May 1939 6	13	20	27
Afghanistan: Kabul	C	18																
China:																		
Amoy	C	7																
	D	3																
Canton	C																P	9
	D																	6
Fatshan	C																P	
	D																	154
Foochow	C	77	118	6														
	D	5	7	2														
Hainan Island	C																P	
Honan	C																P	
Hong Kong	C	29	11	5											2	4	9	10
	D	20	9	2											1	2	10	6
Macao	C	43	1										1			1	9	10
	D	10	1													1	5	6
Shanghai [1]	C	32	10															
Swatow	C	7	1															
Whampoa	C																P	
Yunnanfu [2]																		
India	C	11,391	6,004	3,871	4,915	1,007	1,467	1,877	2,316	587	3,205	3,028						
	D	6,516	3,978	1,924	2,567	459	683	827	1,044	242	1,326	1,425						
Akyab	C														1			
Allahabad	C	2				[3] 1												1
Assam	C	3,555	2,863	427	113	37	51	77	73	59	53	50	33	25	35	69	185	116
	D	1,980	1,838	295	67	10	19	27	42	26	20	25	21	13	17	26	75	38
Bassein	C							1			1		1		2		2	2
Bengal Presidency	C	12,553	14,235	4,477	3,157	818	1,107	1,411	1,605	1,816	2,132	1,882	1,922	1,002	911	915	699	
	D	7,175	8,073	2,307	1,606	392	508	641	756	788	940	917	1,043	486	449	417	337	
Bombay Presidency	C	1,037	513	258	205	48	36	11	3	36	37	34	31					
	D	452	181	111	87	14	13	4	3	13	17	13	8					

Calcutta	C	136	114	59	118	48	71	87	109	147	219	208	190	199	196	245	196	184
Cawnpore	C						1	1	1				2	1		1	3	
	D								1							1		1
Central Provinces and Berar	C	1,135	228	95	61	4	3	18	46	17	47	37	44	39	55	57	39	43
Chittagong	C		1					[4]1	1	2		1	3	6	[4]1	2	5	1
Delhi	D												[4]1					
Howrah	C	32	168	98	255	109	120	108	145	141	143	211	164					
Madras Presidency	C	253	568	1,464	997	40	83	29	49	36	40		7					
	D	115	211	627	496	22	37	15	18	12	14		2					
Madras	C	4	3		3	1			1									
	D	2	1		2													
Negapatam	C	5	7	2														
	D	1	2															
Northwest Frontier Province	C	6																
Orissa Province	C	2	20	36	73	11	15	14	16	11	19	29	58	44	27	46	7	31
Rangoon	C													4	7		2	
Tirumalaivasal	C				5													
India (French):																		
Chandernagor Territory	C	1		2	1		12		4	5	6	6	2					
Karikal Territory	C		1	5	41													
Pondichery Province	C											1						
Siam:																		
Bangkok	C										[4]1		1	2		1		
Smud Prakar Province	C								5	5	7	1						
On vessel: S. S. *Erinpura* at Rangoon from Calcutta	C																1	

[1] During the week ended June 10, 1 case of cholera was reported in Shanghai, China.
[2] Information dated Nov. 30, 1938 stated that cholera had appeared in villages near Yunnanfu, China. In 1 village of approximately 1,000 persons, 500 were said to have died.
[3] Suspected.
[4] Imported.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE[1]

[C indicates cases; D, deaths; P, present]

Place		Oct. 30–Nov. 26, 1938	Nov. 27–Dec. 31, 1938	Jan. 1–28, 1939	Jan. 29–Feb. 25, 1939	Week ended— March 1939 4	11	18	25	April 1939 1	8	15	22	29	May 1939 6	13	20	27
Algeria: Algiers	C							1										
Belgian Congo	C		1				1	2							1	4	2	11
Bolivia. (See table below.)																		
Brazil. (See table below.)																		
British East Africa:																		
Kenya	C		1		3													
Uganda	C	27	9	14	30	6	5	3	10	6		5	2	4	2	3	4	
	D	28	9	14	29	5	5	4	10	6		5	2	4	2	3	4	
China: Manchuria.[2]																		
Dutch East Indies: Java and Madura	C	98	135	252	259	56	64											
	D	97	135	242	256	56	64											
Ecuador:																		
Chimborazo Province	C					3		3		[3]8	7	[3]3						
Riobamba	C				[3]16													
	D				15													
Guayaquil	C	2				1							2					
	D	2											2					
Plague-infected rats		3			[4]1	1			2									
Loja	C				4													
Pueblo Viejo	C				3													
Egypt: Asyut Province	C			1	[5]32	10	6	2	4	5		10	7	13	3	3	1	3
Hawaii Territory: Plague-infected rats:																		
Hawaii Island—Hamakua District:																		
Hamakua Mill Sector		13	40												1			
Honokaa										1								
Kaiwiki			1															
Kapulena												1		1				
Kukaiau			10	6	1	2		1										
Paauhau Sector		12	7	3	1		1		4									
India	C	1,723	1,931	2,015	3,443	556	1,372	1,770	2,020	3,303	4,628	1,170						
	D	737	872	970	1,391	378	577	857	824	628	1,061	527						
Allahabad	D				[6]1													
Bassein[7]	C					1		2										
Plague-infected rats		1						1										

Bihar Province	C																1	12	
	D																1	1	
Bombay Presidency	C	136	101	51	27	11	8		14	11	8	9	13						
	D	65	61	29	13	4	9		7	7	5	3	3						
Calcutta	C									[6]1									
Calicut	C																1		
Central Provinces and Berar	C	430	677	715	1,414	440	585	522	509	454	608	557	295		132	37	27	2	
Cochin	C	2																	
	D	2																	
Plague-infected rats		6	6	1															
Coorg Province	C												4			1			
Madras Presidency	C	215	135	140	164	17	5	5	1	10	3		1						
	D	93	61	53	64	13	3	2	1	7			1						
Rangoon	C			3	[6]1														
	D			2															
Indochina [1] (see also table below): Pnom Penh	C													1					
Madagascar. (See table below.)																			
Peru. (See table below.)																			
Siam:																			
Bichitr Province	C																3	1	
	D																1		
Bisnulok Province	C			1	33	1													
	D			1	5														
Lampang Province	C				1														
Prae	C			3							1	2							
Svargalok Province	C			11	17	1	1												
Tak Province	C		3	7	3														
Tunisia: Tunis	C	2	2									1							
Plague infected rats		1		2	3														
Union of South Africa	C		2	8	18		[9]11		[9]11		[9]6		[9]3						
Cape Province	C			2	7		3	1			2		2		1				
Port Elizabeth	C		1																
	D		1																
Orange Free State	C		5		4		3		3		1		[9]6						
Transvaal	C							1	6										
United States [10]																			

[1] Including plague in the United States and its possessions.
[2] Information dated May 5, states that 34 cases of plague with 8 deaths have occurred in Hsinking, Manchuria, since the beginning of the year.
[3] Pneumonic.
[4] Unofficially reported.
[5] Includes 4 pneumonic cases.
[6] Imported.
[7] For the week ended June 10, 1 fatal case was reported in Bassein, India.
[8] For the week ended June 10, 1 fatal case was reported in Cambodia, Indochina.
[9] For 2 weeks.
[10] Last reported human case, Aug. 30, 1937, Fresno County, Calif. Intensive plague work is being conducted in the western States and detailed reports of plague-infection found in animals and insect hosts are published currently in the PUBLIC HEALTH REPORTS. The following summarizes recent reports for 1938 and 1939: *California*—Ground squirrels, October, December 1938; March and Apr. 18, 25, and 26, 1939; insects, October, December 1938, Mar. 3, 1939; *Nevada*—Insects, Apr. 7–8, 1939; *New Mexico*—Kangaroo rat, Apr. 15, 1939; *Oregon*—Insects, May 10, 1939; *Washington*—Insects, March, and Apr. 13 and 25, 1939.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place		November 1938	December 1938	January 1939	February 1939	March 1939	April 1939
Bolivia	C	1					
Brazil:							
Alagoas State	C		5	19	5		
Parahiba State	C		1	1			
Pernambuco State	C	17	17	15	3		
Rio de Janeiro State	C	11	1				
Indochina: Cambodia	C				2		
Madagascar (central region)	C	73	107	79	77	52	17
	D	64	102	42	67	21	13
Peru	C	6	7	14	9	12	
Cajamarca Department	C					3	
Lambayeque Department	C		1	2		1	
Libertad Department	C	3	2	11	4	1	
Lima Department	C	2	4	1	4	2	
Piura Department	C				1	5	

SMALLPOX

[C indicates cases; D, deaths; P, present]

Place		Oct. 30–Nov. 26, 1938	Nov. 27–Dec. 31, 1938	Jan. 1–28, 1939	Jan. 29–Feb. 25, 1939	Week ended— March 1939 4	11	18	25	April 1939 1	8	15	22	29	May 1939 6	13	20	27
Algeria: Oran Department	C											1						
Angola. (See table below.)																		
Arabia: Aden	D				1													
Argentina. (See table below.)																		
Belgian Congo. (See table below.)																		
Bolivia. (See table below.)																		
Brazil. (See table below.)																		
British East Africa: Tanganyika	C	46		1	174	57	18	15	6	50	24	15	32	25		3		
Canada:																		
Alberta	C				37		2	3	2									
British Columbia	C				4	8												
Manitoba	C		[1]1	8	1			8	14			1	8	4	2			
Ontario	C	2	2		1													
Saskatchewan	C	9	5	17	10		2											

Canary Islands: **Las Palmas**	C							[1] 1	3									
Ceylon: Maskeliya	C																	
China (see also table below):																		
Amoy	C	2					1		1	1	2	1				1		
Dairen	C		2	1				2			4							
Foochow	C			8														
Hong Kong	C	2	30	18	45	15	11	13	6	12	9	5	4	4	3	2	5	1
	D		23	13	23	16	11	15	7	6	6	4	5	5	5	2	1	3
Macao	C				3													
Shanghai	C	318	1,264	834	274	29	24	34	15	10	18	10	7	5	9	4	1	4
Swatow	C			1	3		2			3	1		2					
Tientsin	C		2		1					1								
Chosen (Korea). (See table below.)																		
Colombia (see also table below): **Cartagena**	D				1	1		1				1						
Dahomey. (See table below.)																		
Dutch East Indies: **Surabaya**	C		[2] 1			3		1					1					
Ecuador: **Guayaquil** (see also table below)	C							1					1					
	D							1										
France. (See table below.)																		
French Equatorial Africa: Chad	C												14					
Great Britain: England and Wales—																		
Liverpool	C		1	1														
York County	C	3																
Greece. (See table below.)																		
Guatemala. (See table below.)																		
India	C	1,628	5,335	7,797	11,353	3,076	3,574	3,702	4,885	1,407	1,661	5,508						
	D	401	1,377	1,777	2,536	744	731	775	1,004	627	840	1,245					1	
Allahabad	C			1				2										
Assam	C	39	80	67	58	32	31	17	41	46	14	35	47	83	59	56	87	50
Bengal Presidency	C	160	300	572	1,735	610	462	534	546	687	642	631	795	550	411	488	399	
	D	29	83	203	632	259	186	183	96	262	203	258	308	211	166	169	136	
Bihar Province	C														-	603	853	
Bombay Presidency	C	214	681	1,388	1,514	878	876	942	1,240	1,120	1,228	1,634	1,105					
	D	27	91	187	220	129	104	137	188	175	150	248	192					
Bombay	C		2	12	20	6	9	10	28	11	17	20	8	5	9	12	6	14
	D		1	8	11	5	4	3	9	2	4	6	6	2	4	6	2	5
Calcutta	C	42	116	400	776	221	174	190	221	184	186	205	177	158	100	70	59	69
	D	17	66	231	451	151	120	119	158	141	125	168	129	113	78	54	52	51
Cawnpore	C			4	2		2	1	2	4	1	5	3	1	7	4	2	3
Central Provinces and Berar	C	3	46	81	198	92	126	152	170	245	178	219	281	209	184	203	284	233
Chittagong	C				1													
Cochin	C		1		4						2	1						
Delhi	C	5	23	96	113	39	47	22	25	38	36	34	39	40	44	47	48	64
Howrah	C	5	21	67	148	44	38	51	19		86	56						
Jodhpur	D															19	9	10
Karachi	C	[2] 1	[2] 3	3	3			1	[2] 2	1			2		1	4	1	2
Madras Presidency	C	363	893	1,058	1,389	431	327	328	314	249	325		297					
	D	55	168	370	233	69	72	43	50	57	69		57					
Madras	C	160	186	171	304	81	60	43	52	49	39	37	36	32	15	8	2	4

[1] For 2 weeks.
[2] Imported.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

Place		Oct. 30–Nov. 26, 1938	Nov. 27–Dec. 31, 1938	Jan. 1–28, 1939	Jan. 29–Feb. 25, 1939	Week ended— March 1939 4	11	18	25	April 1939 1	8	15	22	29	May 1939 6	13	20	27
India—Continued.																		
Moulmein	C	4		1														
Northwest Frontier Province	C	75	290	155	113	23	31	44	16	15	30	28	3	34	19	10	10	47
Orissa Province	C	35	208	338	465	152	148	221	178	192	205	187	237	218	290	155	140	137
Punjab	C	57	135	196	329	55	57	38	30	63	67	25	36		61		41	112
Rangoon	C	5	2	9	5	7	3	4		5	3			2	4	3	5	2
Sind State	C	119	302	158	299	48	97	68	66	58	38	25	48	82	58	60	42	49
Vizagapatam	C									3	2	1						
India (French):																		
Chandernagor Territory	C		1		2					1	1		1					
Pondichery Territory	C				6	4		1	2		1							
	D				4	2			1		1							
Indochina (French) (see also table below):																		
Tonkin Province	C	95	267	214	183	31	96	50	34	29	59	52	27	61	73		33	29
Haiphong	C				2													
Hanoi	C			1	10	3	1	1	1	1	1		3	8	4		7	11
Saigon-Cholon	C		12	6	3													
Iran	C		1	1			7		4	6				4		3		
Iraq	C		1	6	1						5			1				
Baghdad	C															[1] 1		
Ivory Coast. (See table below.)																		
Japan:																		
Kanagawa prefecture	C			1														
Kobe	C		3	4	66	4	1	3	8									
Kyoto	C			13	1													
Nagasaki	C		7															
Nagoya	C						1											
Okayama prefecture	C	1	1															
Osaka	C				1	1									1			
Taiwan.[2]																		
Tokyo	C		2		5								1					
Malta. (See table below.)																		
Mexico (see also table below):																		
Mexico, D. F	C		1	1	3	6				1	2							
Monterrey	C			4	2		1			1								
Piedras Negras	D								1									

San Luis Potosí	D				5		1	2				1						1
Tampico	C	1			7	7	9	4	2	1						4		
Morocco. (See table below.)																		
Mozambique	C					6	1		4							4		
Nigeria	C	87	182	320	984	145	355	121	203	267	224	233	197	340	209			
Calabar	C			1	6	2		3		1		2			42			
Lagos	C						1								2			
Port Harcourt	C			3	1				1									
Niger Territory. (See table below.)																		
Northern Rhodesia	C		6															
Portugal (see also table below).																		
Lisbon	C	20	6	42	21	9	5	4	3	10	7	6	7	4	8	7	4	14
Oporto	C		5	5	14	1			1					2		7	1	
Salvador. (See table below.)																		
Senegal. (See table below.)																		
Siam	C		6	48			1		1			1		1				
Sierra Leone	C		2	4	9				[1] 2				8					
Southern Rhodesia	C	125	30	37	48						9			12		1	9	
Straits Settlements: Singapore	C						1											
Sudan (Anglo-Egyptian)	C	20	31	28	18	4	6	6	1	5	3	8	65	9	6	1		5
Syria: Aleppo	C						1											
Turkey. (See table below.)																		
Union of South Africa. (See table below.)																		
Uruguay: Artigas	C								1									
Venezuela. (See table below.)																		

On vessels:

S. S. *Hartlebury* bound for New York via Durban [4]	1 case	Dec. 1, 1938
S. S. *Nagasaki Maru* at Nagasaki from Shanghai	1 case	Dec. 7, 1938
S. S. *Pyrrhus* at Yokohama from Shanghai	1 case	Dec. 10, 1938
S. S. *Westpoint* at sea en route Surabaya	1 death	Do.
S. S. *Tyles* at Yokohama from Hong Kong and Shanghai	1 case	Dec. 13, 1938
S. S. *Nagasaki Maru* at Nagasaki from Shanghai	1 case	Dec. 16, 1938
S. S. *Bellerophon* at Hong Kong from Yokohama, Kobe, and Shanghai	1 case	Dec. 22, 1938
S. S. *Selandia* at Singapore from Saigon	1 case	Jan. 15, 1939
S. S. *Pottsdam* at Singapore from Yokohama	1 case	Jan. 17, 1939
S. S. *E. Sang* at Swatow from Shanghai	1 case	Jan. 18, 1939
S. S. *Maihar* at Aden from Calcutta	1 case	Jan. 30, 1939

On vessels—Continued.

S. S. *Alavi* at Aden from Bombay	1 case	Feb. 2, 1939
S. S. *Orange Moor* at Saigon from Shanghai	1 case	Do.
S. S. *Queen Victoria* at Victoria from Shanghai	1 death	Feb. 6, 1939
S. S. *Rugelsey* at Williamshead from Shanghai	10 cases	Feb. 19, 1939
Pilgrim ship *Tantalus* at Penang from Jeddah	1 case	Feb. 27, 1939
Pilgrim ship *Ajax* at Penang from Jeddah	1 case	Mar. 2, 1939
S. S. *Gneisenan* at Genoa	1 case	Mar. 5, 1939
S. S. *Riley* at Fremantle from Shanghai	1 case	Do.
S. S. *Mau Sang* at Sandakan from Hong Kong	1 case	Apr. 6, 1939
S. S. *Thisteleglen* at Singapore	1 case	Apr. 10, 1939
S. S. *Empress of Russia* at Hong Kong from Shanghai	2 cases	Apr. 20, 1939

[1] For 2 weeks.
[2] Imported.
[3] Information dated Apr. 6, 1939, states that up to Mar. 31, 1939, 61 cases of smallpox were reported in Taiwan, Japan.
[4] Patient removed from vessel and died in hospital in Iloilo district, P. I.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

Place		November 1938	December 1938	January 1939	February 1939	March 1939	April 1939
Angola	C	4	27				
Argentina	C				3		
Belgian Congo	C	357	211	175	26		
Bolivia:							
Cochabamba Department	C	[1]4					
La Paz Department	C	[1]19					
Oruro Department	C	[1]1					
Potosi Department	C	[1]15					
Santa Cruz Department	C	[1]2					
Tarija Department	C	2					
Brazil: **Bahia**	C	1	1				
China: Harbin	C			2	1		
Chosen (Korea)	C	1				42	
Colombia (see also table above)	C		[2]122	25			
Dahomey	C	15	14	12		4	
Ecuador: **Guayaquil** and vicinity	C	6	2				
France	C			1	3		
Greece	C	3	5	12	1	38	
Guatemala	C	16			5		4
Indochina (French) (see also table above)	C	174	475	312	163	515	606
	D	14	65	47	21	79	52
Ivory Coast	C	25		18	59	5	
Malta	C		9				
Mexico (see also table above):							
Aguascalientes State—Aguascalientes	C		6		[3]15	3	
Chihuahua State—Chihuahua	C					[3]1	
Hidalgo State	C	7	36		[3]29	7	
Jalisco State—Guadalajara	C				[3]1		
Mexico, D. F	C	2	6		[3]7	9	
Nuevo Leon State—Monterrey	C					3	
Queretaro State	C				[3]1		
San Luis Potosi State—San Luis Potosi	C	7			[3]16	11	
Sonora State—**Guaymas**	C					1	
Tamaulipas State — **Tampico**	C				[3]9	15	
Morocco	C	3	4	2		1	
Niger Territory	C			48	34	7	9
Portugal (see also table above)	C	169	62			112	
	D	12	12			11	
Salvador	C					1	
Senegal	C				35	66	42
Turkey	C			58	8		59
Union of South Africa:							
Cape Province	C		1				
Natal	C						
Transvaal	C		37				
Venezuela	D		1	2	8		3

[1] For the period Oct. 8 to Nov. 30, 1938.
[2] For November and December 1938.
[3] For January and February 1939.

TYPHUS FEVER

[C indicates cases; D, deaths; P, present]

Place		Oct. 30–Nov. 26, 1938	Nov. 27–Dec. 31, 1938	Jan. 1–28, 1939	Week ended—															
					February 1939				March 1939				April 1939					May 1939		
					4	11	18	25	4	11	18	25	1	8	15	22	29	6	13	20
Algeria:																				
Algiers Department	C	6	27	9	10	----	2	2	7	5	13	4	6	----	6	1	8	----	11	----
Algiers	C	3	5	2	----	----	----	----	----	5	8	3	----	----	----	----	5	----	10	----
Constantine Department	C	6	44	115	32	20	26	12	36	18	53	57	30	19	38	54	54	69	13	----
Bone	C	1	----	4	----	----	----	----	----	----	2	----	1	----	----	5	3	1	----	----
Constantine	C	1	7	11	7	----	----	1	1	4	----	2	----	4	8	27	----	10	8	----
Philippeville	C	1	3	3	1	----	----	----	----	----	----	14	----	2	----	----	----	2	----	----
Oran Department	C	4	5	28	5	16	4	4	4	10	9	6	2	7	2	4	16	6	2	----
Southern Territories	C	----	----	----	----	----	----	7	2	1	17	1	9	----	1	9	3	----	36	----
Australia:																				
Brisbane	C	----	----	----	----	----	----	----	----	1	----	----	----	----	----	----	----	----	----	----
Queensland	C	----	----	----	----	----	5	----	----	----	----	----	3	1	1	----	----	----	----	----
Bolivia. (See table below.)																				
British East Africa: Kenya	C	3	3	----	----	----	----	1	----	----	----	----	----	----	1	----	----	----	----	----
Bulgaria. (See table below.)																				
Chile	C	112	147	80	16	17	16	----	----	[1] 39	----	----	----	----	----	----	----	----	----	----
Antofagasta Province	C	2	----	2	----	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Bio Bio Province	C	----	----	2	4	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Cautin Province	C	----	----	----	----	2	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Coquimbo Province	C	----	----	----	----	4	4	----	----	[1] 6	----	----	----	----	----	----	----	----	----	----
Curico Province	C	----	----	15	----	----	1	----	----	----	----	----	----	----	----	----	----	----	----	----
Los Angeles	C	----	----	9	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Nuble Province	C	6	3	2	----	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Santiago Province	C	70	81	50	11	9	10	----	----	[1] 20	----	----	----	----	----	----	----	----	----	----
Valdivia Province	C	1	2	1	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Valparaiso	C	4	5	----	----	----	1	----	----	----	----	----	----	----	----	----	----	----	1	----
China (see also table below):																				
Dairen	C	1	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Shanghai	C	----	----	6	----	----	----	----	----	----	----	----	----	----	----	----	----	2	----	----
Tientsin	C	----	----	2	----	----	----	----	----	----	----	----	1	----	----	----	----	----	----	----
Chosen (Korea). (See table below.)																				
Egypt:																				
Alexandria	C	----	2	----	----	----	----	----	1	----	----	2	4	2	1	----	6	5	8	3
Asyut Province	C	----	----	1	2	----	----	2	----	----	----	----	2	----	----	1	11	8	2	1
Beheira Province	C	----	----	1	1	3	12	8	14	14	10	6	22	17	13	29	28	20	10	8

[1] For 3 weeks.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

TYPHUS FEVER—Continued

[C indicates cases; D, deaths; P, present]

Place		Oct. 30–Nov. 26, 1938	Nov. 27–Dec. 31, 1938	Jan. 1–28, 1939	Week ended— February 1939				March 1939				April 1939				May 1939			
					4	11	18	25	4	11	18	25	1	8	15	22	29	6	13	20
Egypt—Continued.																				
Cairo	C		2	3	1	1	13	3	7	14	9	1	6	2	3	12	4	2	1	2
Dakahliya Province	C							11	14	30	16	46	25	20	36	51	46	49	44	48
Faiyum Province	C														7					
Gharbiya Province	C			15	7	23	13	8	82	53	43	67	64	104	97	48	42	50	34	76
Girga Province	C			4	7	11	18	22	17	12	5	13	14	12	3	12	1	3	4	7
Giza Province	C				1	10	2	6	8	2	6		8	2	8	21	14	9		9
Kalyubiya Province	C				8	3	15	7	25	28	11	20	3	8	3	12	18	6	8	10
Minufiya Province	C			3	14	13	13	27	36	16	18	31	9	6	11	25	45	40	45	19
Qena Province	C											47	61	18	13	20	15	6	4	1
Sharkiya Province	C				3	8	5	1	14	10	17	5	11	25	6	12	12	4	5	
Provinces	C	8	43	70	43	90	98	92	212	155	145	236	229	216	199	234	232	195	200	186
Eritrea: Hamasien	C										2	2								
Greece. (See table below.)																				
Guatemala. (See table below.)																				
Hawaii Territory: Honolulu	C	8	7	1	1					1								1		
Hungary	C		3	1								5		4			5			
India: Coorg Province	C										5				3					
Iran	C	1						1							1			2	9	
Iraq	C		2				1	1												
Baghdad	C								1							1	2	1	1	
Kirkuk Province	C						1													
Latvia. (See table below.)																				
Libya: Suani Benaden	C			3																
Lithuania. (See table below.)																				
Mexico (see also table below):																				
Guadalajara	D		1																	
Mexico, D. F.	C	10	9	5		3	1		1	1			4	1						
Nuevo Laredo	D	2																		
San Luis Potosí	D		1											1				1		
Torreon	D		1					1								2				
Morocco	C	82	117	111	13	43	39	57	35	44	51	47	41	26	42	47	37	45	36	42
Casablanca	C			1		1	1	4	4	1	1	2	2	2	4	4				
Palestine:																				
Haifa	C	2	1					1									2		2	1
Jaffa	C		6	3								1			1					

Poland	C	94	321	357	121	138	111	93	139	135	171	135	145	165	151	158	167	109	99	104
	D	6	20	14	5	6	6	3	5	7	6	5	10	6	5	7	6	6	5	------
Portugal: Oporto (see also table below)	C	------	------	2	------	------	------	------	------	------	------	------	------	------	2	1	------	------	------	------
Portuguese East Africa: Laurenço Marques	C	------	------	------	------	------	------	------	------	------	2	------	------	------	------	------	------	------	------	------
Rumania. (See table below.)																				
Spain. (See table below.)																				
Straits Settlements: Singapore	C	1	------	2	2	------	1	2	------	1	------	------	------	------	1	------	------	------	------	------
Sumatra: Medan	D	------	------	------	------	------	------	1	------	------	------	------	------	------	------	------	------	------	------	------
Swaziland. (See table below.)																				
Syria:																				
Aleppo	C	------	------	------	------	1	1	------	------	------	------	------	------	------	------	------	------	------	------	------
Beirut	C	------	1	------	------	------	------	------	------	------	------	1	------	------	------	------	------	------	------	------
Lebanese Republic	C	------	------	------	------	------	------	------	------	------	------	------	1	------	------	------	1	------	------	------
Trans-Jordan	C	1	------	------	------	------	------	------	------	------	------	------	------	------	------	7	1	5	1	3
Tunisia:																				
Tunis	C	11	42	43	7	6	12	8	16	14	12	22	32	21	8	16	12	6	13	16
Provinces	C	12	261	436	41	182	173	110	109	191	206	188	185	93	221	282	292	264	248	271
Turkey. (See table below.)																				
Union of South Africa. (See table below.)																				
Venezuela. (See table below.)																				
Yugoslavia	C	5	25	21	13	10	9	6	------	11	29	9	12	13	3	56	31	13	25	19
On vessel: *S. S. Stanbrook* at Mersel Kebir	C	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	1	------	------	------

Place		November 1938	December 1938	January 1939	February 1939	March 1939	April 1939
Bolivia:							
La Paz Department	C	[2]14	------	------	------	------	------
La Paz	C	[2]11	------	------	------	------	------
Oruro Department	C	[2]3	------	------	------	------	------
Santa Cruz Department	C	[2]1	------	------	------	------	------
Bulgaria	C	2	2	8	------	------	14
China: Manchuria—Harbin	C	16	------	5	------	------	------
Chosen (Korea)	C	21	------	78	9	106	------
Greece	C	10	8	9	------	------	------
Guatemala	C	38	2	9	22	25	14
Latvia	C	1	------	2	------	------	------
Lithuania	C	3	------	30	42	32	------
Mexico (see also table above):							
Aguascalientes State—Aguascalientes	C	------	2	------	[2]11	2	------
Hidalgo State	C	1	1	------	[2]2	1	------
Mexico State	C	7	------	------	[2]8	------	------
Mexico, D. F	C	13	6	2	[2]14	9	------
Nayarit State	C	1	------	------	------	------	------

Place		November 1938	December 1938	January 1939	February 1939	March 1939	April 1939
Mexico—Continued.							
Oaxaca State	C	3	------	------	------	------	------
Puebla State—Puebla	C	3	------	------	------	------	------
Queretaro State	C	2	1	------	[2]4	------	------
San Luis Potosi State—San Luis Potosi	C	1	5	------	[2]8	3	------
Tamaulipas State	C	------	------	------	[2]1	------	------
Portugal (see also table above)	C	7	3	------	------	------	------
Rumania	C	77	100	144	121	205	------
Spain	C	------	------	------	------	------	4
Swaziland	C	------	------	1	------	------	------
Turkey	C	21	49	32	46	57	62
Istanbul	C	2	4	6	------	4	4
Union of South Africa:							
Cape Province	C	91	93	23	25	17	------
Natal	C	8	1	1	3	2	------
Orange Free State	C	2	------	------	1	3	------
Transvaal	C	------	------	26	------	16	------
Venezuela: Bolivar	C	------	------	------	------	------	1

[2] For the period Oct. 8–Nov. 30, 1938.

[1] For January and February 1939

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

YELLOW FEVER

[C indicates cases; D, deaths; P, present]

Place		Oct. 30–Nov. 26, 1938	Nov. 27–Dec. 31, 1938	Jan. 1–28, 1939	Week ended—															
					February 1939				March 1939				April 1939					May 1939			
					4	11	18	25	4	11	18	25	1	8	15	22	29	6	13	20	27
Belgian Congo: Buta	C	[1]1																			
Brazil: [2]																					
Espirito Santo State	D			4	4	6	13	19	5	6	6	4	9	6	5	7	1				[1]1
Minas Geraes State	D					4	1	3	2		1			1		1					
Rio de Janeiro State	D			2							1										
French Equatorial Africa:																					
Chad—Fort Lamy	C			1																	
Sosso	C	1																			
Gold Coast [4]	C							[1]1							1						
Ivory Coast [5]	C	[6]8	[7]5			1		2						[1]2		1		[1]3		1	2
	D		2			1															
Nigeria	C	4	3	2	[1]2							1									
	D			1	[1]2																
Port Harcourt	C	1																			
Niger Territory: Tahua	C																				[1]1
Sudan (French):																					
Kona	C	[1]1																			
Sangha	C		1																		
On vessel: S. S. *St. Octave* at Grand Bassam Roadstead from Bordeaux, Dakar, Konakry, Tabou, and Sassandra	C	[1]1																			

[1] Suspected.
[2] See also reports of yellow fever in Brazil in preceding issues of the PUBLIC HEALTH REPORTS.
[3] Jungle type.
[4] During the week ended June 3, 1939, 1 fatal case of yellow fever was reported in Keta, Gold Coast.
[5] Yellow fever was also reported in Ivory Coast as follows: Week ended June 3, 2 cases, week ended June 10, 4 cases and 4 suspected cases.
[6] Includes 1 suspected case.
[7] Includes 2 suspected cases.